

STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

FROM: X-6 Andrew O'Sullivan
Wetlands Program Manager

DATE: July 1, 2021

AT (OFFICE): Department of
Transportation

SUBJECT Dredge & Fill Application
Lyme Thetford, 14460

Bureau of
Environment

TO Karl Benedict, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application amendment package prepared by Stantec Consulting Services for NH DOT Bureau of Bridge Design for the subject Major impact project. This wetland permit amendment is to address the following updates:

- The change to the river access from Vermont to New Hampshire at lot 22 (319 River Road) and the associated impacts under the final design. A copy of the temporary construction easement upon lot 22 for the temporary river access is provided as Exhibit V;
- To clarify the change to the bridge pier work from removal of the pier to rehabilitation of the existing pier under the final design. The amount of permanent impact associated with the pier work is unchanged;
- To clarify the proposed bridge repair/rehabilitation construction will not include a bridge slide and the bridge will remain in place for the rehabilitation work under the final design;
- To clarify the repair work needed to existing riprap embankment at the New Hampshire bridge abutment within the original 1937 riprap design footprint above and below the currently observed OHW line under final design;
- To include the changes to the stormwater system and relocated outlet pipe from the north side to the south side at the New Hampshire bridge abutment under final design.

The total amount of wetland impact is unchanged, and no additional fee is required. The amount of permanent impact is unchanged at 358 SF and temporary impact is unchanged at 50,725 SF under the final design.

If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

AMO:amo
Enclosures

cc:
BOE Original
Town of Lyme (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Beth Alafat & Jeanie Brochi, US Environmental Protection Agency (via electronic notification)
Michael Hicks & Rick Kristoff, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)
Connecticut River Upper Valley Local Advisory Subcommittee (via certified mail)

AMENDED

State of New Hampshire - Wetlands Permit Application

Lyme, NH – Thetford, VT, A000(394), 14460

East Thetford Road Bridge over the Connecticut River

Bridge Rehabilitation Project



April 2019 – Amended June 2021



Lyme, NH – Thetford, VT 14460 Amended Wetlands Permit Application

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**AMENDMENT REQUEST FORM
FOR A WETLANDS APPLICATION OR PERMIT
Water Division/Land Resources Management
Wetlands Bureau**



RSA/Rule: RSA 482-A:3, XIV(e)/ Env-Wt 311.13; Env-Wt 314.07

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

Any request for an amendment to a wetlands application or permit must be submitted to the Department on this form. An applicant may request an amendment to a pending permit application or an existing permit, provided the proposed change does not constitute a **“significant amendment.”** A **“significant amendment”** means an amendment which changes the proposed or previously approved acreage of the permitted fill or dredge area by 20 percent or more, includes a prime wetland, or elevates the project’s impact classification. This meaning of "significant amendment" shall not apply to an application amendment that is in response to a request from the Department (RSA 482-A:3, XIV(e)).

SECTION 1 - REQUESTED AMENDMENT TYPE AND AMENDMENT CRITERIA
<p>Does the proposed change constitute a “significant amendment” as provided in RSA 482-A:3, XIV(e) and described above? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If you answered “yes” to the previous question, then you cannot request an amendment using this form and must file a new permit application.</p> <p><input type="checkbox"/> AMENDMENT TO PENDING PERMIT APPLICATION, NHDES FILE NUMBER: [] (proceed to Section 2)</p> <p><input checked="" type="checkbox"/> AMENDMENT TO EXISTING PERMIT NUMBER: 2019-01230 (proceed to Section 3)</p>
SECTION 2 - AMENDMENT TO A PENDING PERMIT APPLICATION
<p><input checked="" type="checkbox"/> Not applicable</p> <p>To request an amendment to a pending permit application, the applicant must:</p> <ul style="list-style-type: none"> • Submit the information required by Env-Wt 311.03, showing the changes prior to the Department’s issuance of a final decision on the application, including but not limited to, a revised set of plans and revised application fees for any additional square footage of impacts calculated pursuant to RSA 482-A:3, I(b) or (c) as applicable, and • Provide notice to each person to whom notice of the original application was sent prior to filing the amended application with the Department (Env-Wt 311.13). <p><input type="checkbox"/> By checking this box, you confirm that you have provided all information required pursuant to Env-Wt 311.03 to the Department and provided the required notice(s) as described above.</p>

SECTION 3 - AMENDMENT TO AN EXISTING PERMIT Not applicable

To request an amendment to an existing permit, the permittee must:

- Submit the information required and filed with the original permit application, including but not limited to a revised set of plans, and revised application fees for any additional square footage of impacts calculated pursuant to RSA 482-A:3, I(b) or (c) as applicable, and
- Provide notice to all who received notice of the original application prior to filing the amended application with the Department (Env-Wt 314.07).

By checking this box, you confirm that you have provided all necessary information to the Department and provided the required notice(s) as described above.

This wetland permit amendment is to address the following updates:

- The change to the river access from Vermont to New Hampshire at lot 22 (319 River Road) and the associated impacts under the final design. A copy of the temporary construction easement upon lot 22 for the temporary river access is provided as Exhibit V;
- To clarify the change to the bridge pier work from removal of the pier to rehabilitation of the existing pier under the final design. The amount of permanent impact associated with the pier work is unchanged;
- To clarify the proposed bridge repair/rehabilitation construction will not include a bridge slide and the bridge will remain in place for the rehabilitation work under the final design;
- To clarify the repair work needed to existing riprap embankment at the New Hampshire bridge abutment within the original 1937 riprap design footprint above and below the currently observed OHW line under final design;
- To include the changes to the stormwater system and relocated outlet pipe from the north side to the south side at the New Hampshire bridge abutment under final design.

The total amount of wetland impact is unchanged, and no additional fee is required. The amount of permanent impact is unchanged at 358 SF under the final design. With this amendment, there is additional temporary impact associated with the repair to the existing riprap embankment at the NH bridge abutment area within the 1937 riprap design footprint. This work is located above and below the current OHW line, which has increased from the original elevation at the time of bridge completion in 1937, approximately 8 feet higher with the 1950 construction of the Wilder Dam located downstream of the project. These two existing riprap embankment temporary impact areas are identified in the amendment. A copy of the original riprap detail sheet (Revised January 8, 1937) is included in the updated plan set as sheet 12, and two 1937 construction photographs are provided in Exhibit W. There are additional temporary bank impacts for the temporary access from the New Hampshire side of the river at lot 22. A wetland delineation was conducted for the temporary access area on the abutting parcel and a report is included in Exhibit S. The small additional temporary bank impact area for the temporary NH access (125 SF) is compensated with an approximate 4-inch reduction in width of the original 130 ft wide trestle to meet the intent of minimizing impacts to the extent practical (resulting in a net zero change in temporary impacts project wide) and to avoid the need for additional fees. Also, the relocation of the stormwater outlet to the downstream side of the bridge will alleviate concerns with the stormwater outlet adjacent to the "Toll House". The above noted changes to the permit under this amendment are incorporated in the attached and updated documents. Note that any unchanged exhibits have not been included in this amendment.

A separate Shoreland Permit Application for the temporary NH access is forthcoming.

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, PO Box 95, Concord, NH 03303-0095

www.des.nh.gov



WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management



Check the status of your application: www.des.nh.gov/onestop

RSA/Rule: [RSA 482-A/ Env-Wt 100-900](#)

<i>Administrative Use Only</i>	<i>Administrative Use Only</i>	<i>Administrative Use Only</i>	File No.:
			Check No.:
			Amount:
			Initials:

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to [Guidance Document A](#) for instructions.

Standard Review (Minimum, Minor or Major Impact) Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if Mitigation is Required, please refer to the [Determine if Mitigation is Required Frequently Asked Question](#).

Mitigation Pre-Application Meeting Date: Month: 03 Day: 20 Year: 2019
 N/A - Mitigation is not required

3. PROJECT LOCATION:

Separate wetland permit applications must be submitted for each municipality that wetland impacts occur within.

ADDRESS: **East Thetford Road** TOWN/CITY: **Lyme**
 TAX MAP: **403** BLOCK: _____ LOT: **22** UNIT: _____
 USGS TOPO MAP WATERBODY NAME: **Connecticut River** NA STREAM WATERSHED SIZE: **3137 SQ MI** NA
 LOCATION COORDINATES (If known): **N478657.6527,E847933.4509** Latitude/Longitude UTM State Plane

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

Rehabilitation of steel truss bridge no. 053/112 over Connecticut River between Lyme, NH & Thetford VT that temporarily impacts 50,725 SF of Riverine wetlands and stream bank including repairs to the NH bridge abutment and existing riprap embankment, and rehabilitation of the existing bridge pier with 358 SF permanent impact. A temporary trestle is to be constructed from New Hampshire lot 22 to access the pier and the VT & NH abutments.

5. SHORELINE FRONTAGE:

NA This does not have shoreline frontage. SHORELINE FRONTAGE: **66 ft - ROW and 90 ft Lot 22**
 Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application. To determine if other Land Resources Management Permits are required, refer to the [Land Resources Management Web Page](#).

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Individual Sewerage Disposal per RSA 485-A:2	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Subdivision Approval Per RSA 485-A	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Shoreland Permit Per RSA 483-B	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input checked="" type="checkbox"/> PENDING <input type="checkbox"/> DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:

See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB 21 - 1856.

b. [Designated River](#) the project is in ¼ miles of: Connecticut River; and
 date a copy of the application was sent to the [Local River Management Advisory Committee](#): Month: ___ Day: ___ Year: ___
 N/A

8. APPLICANT INFORMATION (Desired permit holder)LAST NAME, FIRST NAME, M.I.: **NH DEPT. TRANSPORTATION**TRUST / COMPANY NAME: **NH DEPT. TRANSPORTATION** MAILING ADDRESS: **P.O. Box 483**TOWN/CITY: **Concord** STATE: **NH** ZIP CODE: **03302-0483**EMAIL or FAX: **andrew.osullivan@dot.nh.gov** PHONE: **603-271-3226**

ELECTRONIC COMMUNICATION: By initialing here: _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.

9. PROPERTY OWNER INFORMATION (If different than applicant)

LAST NAME, FIRST NAME, M.I.:

TRUST / COMPANY NAME: MAILING ADDRESS:

TOWN/CITY: STATE: ZIP CODE:

EMAIL or FAX: PHONE:

ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.

10. AUTHORIZED AGENT INFORMATIONLAST NAME, FIRST NAME, M.I.: **Leach, Michael** COMPANY NAME: **Stantec Consulting Services, Inc**MAILING ADDRESS: **5 Dartmouth Drive - Suite 200**TOWN/CITY: **Auburn** STATE: **NH** ZIP CODE: **03032**EMAIL or FAX: **michael.leach@stantec.com** PHONE: **603-206-7538**ELECTRONIC COMMUNICATION: By initialing here ml, I hereby authorize NHDES to communicate all matters relative to this application electronically.**11. PROPERTY OWNER SIGNATURE:**

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for NHPA 106 compliance.
8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail.

 Property Owner Signature	Jennifer Reczek Print name legibly	6/ 30/ 2021 Date
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MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

	Print name legibly	Date
--	--------------------	------

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will be reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

	Print name legibly	Town/City	Date
Town/City Clerk Signature			

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

14. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact

Permanent: impacts that will remain after the project is complete.

Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.	TEMPORARY Sq. Ft. / Lin. Ft.
Forested wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Scrub-shrub wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Emergent wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Wet meadow	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Intermittent stream	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Perennial Stream / River	358 / 50 <input type="checkbox"/> ATF	50,276 / 175 <input type="checkbox"/> ATF
Lake / Pond	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Bank - Intermittent stream	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Bank - Perennial stream / River	/ <input type="checkbox"/> ATF	449 / 94 <input type="checkbox"/> ATF
Bank - Lake / Pond	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Tidal water	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Salt marsh	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Sand dune	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Prime wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Prime wetland buffer	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Undeveloped Tidal Buffer Zone (TBZ)	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Previously-developed upland in TBZ	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - Lake / Pond	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - River	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - Tidal Water	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Vernal Pool	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
TOTAL	358 / 50	50,725 / 269

15. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

Minimum Impact Fee: Flat fee of \$ 200

Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking) 51,083 sq. ft. X \$0.20 = \$ 10,216.60

Temporary (seasonal) docking structure: _____ sq. ft. X \$1.00 = \$ _____

Permanent docking structure: _____ sq. ft. X \$2.00 = \$ _____

Projects proposing shoreline structures (including docks) add \$200 = \$ _____

Total = \$ 10,216.60

The Application Fee is the above calculated Total or \$200, whichever is greater = \$ 10,216.60

**WETLAND PERMIT FEE PAID UNDER ORIGINAL APPLICATION
NO CHANGE IN IMPACTS UNDER AMENDMENT = \$0.00**

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

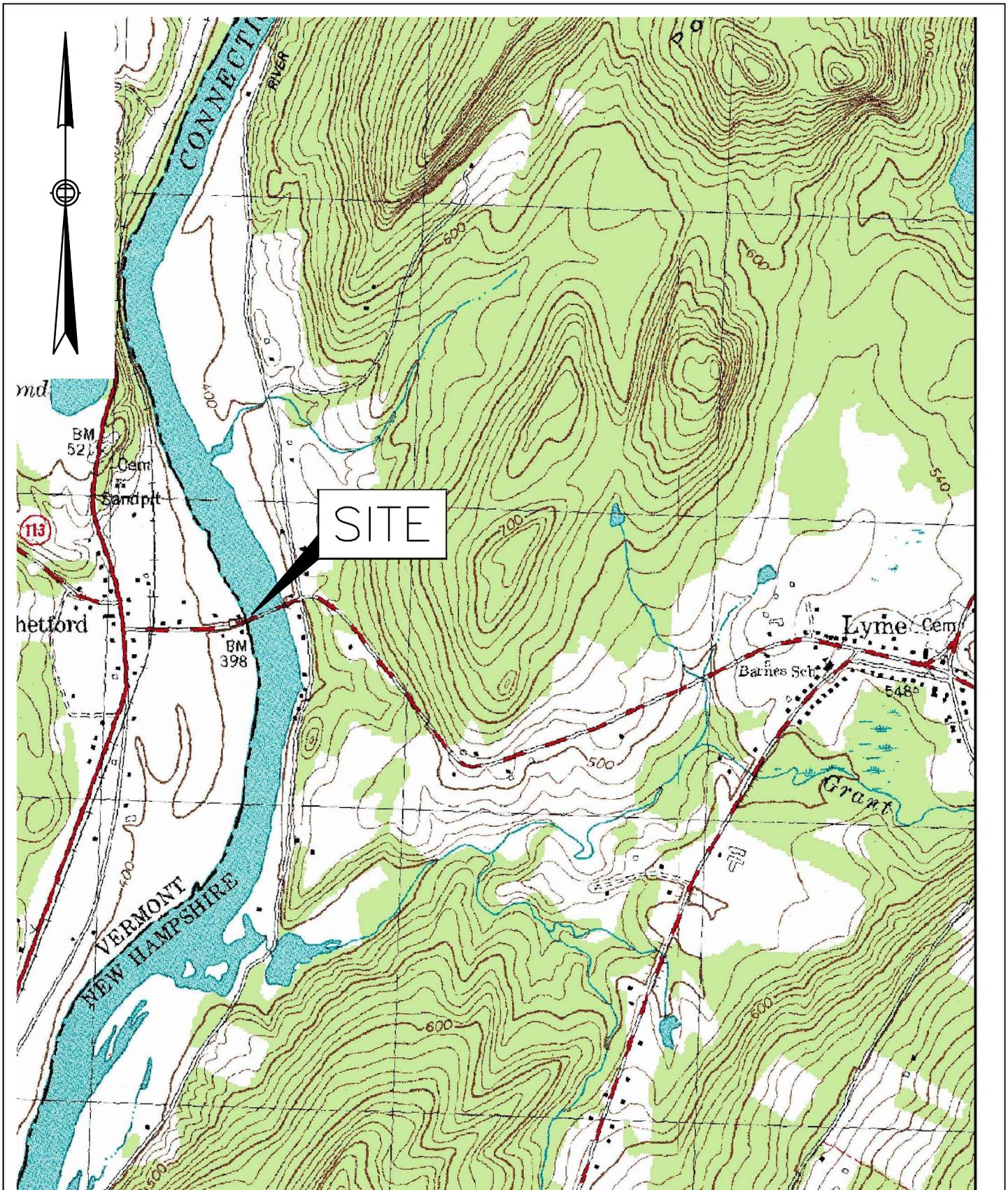


FIGURE 1

Site Location Plan
 Bridge Over The Connecticut River
 Lyme, New Hampshire
 Thetford, Vermont

Scale: 1"=2000'±



Stantec

Stantec Consulting Services, Inc.
 5 DARTMOUTH DRIVE, SUITE 101
 AUBURN, NEW HAMPSHIRE 03032
 TEL 603-669-8872
 FAX 603-669-7636



**WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS**

**Land Resources Management
Wetlands Bureau**



Check the Status of your application: www.des.nh.gov/onestop

RSA/ Rule: RSA 482-A, Env-Wt. 100-900

Env-Wt. 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project’s design in assessing the impact of the proposed project to areas and environments under the department’s jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

The need of this project and proposed impacts are to maintain the safety, integrity, reliability, and continuity of a vital local river crossing serving Thetford, VT and Lyme, NH by addressing the current structural deficiencies of the 84 years old existing bridge crossing the Connecticut River and removing this bridge from the New Hampshire Department of Transportation (NHDOT) red list. A NHDOT inspection of the bridge and pier completed in the fall of 2013 indicated the bridge’s deteriorated condition is no longer capable of safely supporting legal loads and the bridge was subsequently posted at a 15-ton load limit in 2014 and placed on the NHDOT’s bridge red list. Some repairs were made in the fall 2014; however, deterioration of the bridge floor system is still ongoing, and thus the 15-ton posting was retained with the bridge remaining on the NHDOT’s red list. The inspection also found the existing concrete pier is in poor condition and must be rehabilitated at a minimum. The concrete pier has extensive cracking and spalling concrete and has exposed reinforcing steel above and below the waterline.

The proposed rehabilitation of the existing bridge project includes mostly temporary wetland impacts (50,725 SF) to conduct the bridge rehabilitation work including repairs to the existing 1937 riprap within the channel and along the bank at the existing NH bridge abutment (within the original riprap embankment footprint). The proposed project includes a small permanent impact (358 SF) necessary for the pier rehabilitation work in the river. See Figure 1 for the project location. See the attached Wetland Plans in Appendix A for details of the proposed impacts under this project.

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

The proposed alternative is the most practical, least impacting to wetlands and surface waters with the utilization of temporary trestles to access the existing deteriorated bridge and pier. The temporary trestle access is proposed from the New Hampshire side of the river through vacant lot 22 to the south of the bridge. Since the bridge was originally constructed in 1937, a hydroelectric dam (Wilder Dam) located downstream of the bridge was constructed in 1950, which has increased the river depth and OHW. Due to the additional river depth and existing subsurface conditions, a temporary cofferdam is necessary to access and rehabilitate the existing pier. The temporary impact associated with the temporary trestle deck and bulkhead placed above the river in NH is 50,014 SF. The temporary impact for the trestle deck access in Vermont is 8,777 SF to the river and 172 LF along the Vermont river bank for the bridge abutment reconstruction. A temporary impact to the NH river bank of 125 SF is proposed and is associated with temporary construction access placed across lot 22 to access the river and trestle from lot 22 during the pier reconstruction and bridge abutment reconstruction.

In addition, the existing river bank and channel riprap adjacent to the bridge abutment is to be repaired within the original footprint embankment riprap shown on the original design plans. The temporary bank (324 SF) and channel (262 SF) repair totals to 586 SF along the bank/channel. In addition, the roadway drainage system on the NH side exists in close proximity to the “Toll House” on lot 23; and the stormwater outlet of this system is proposed to be relocated to the south side of the bridge at the downstream location and along and above the riprap repair location.

The permanent impact under this application is for the additional pier base size (width and length) for the concrete encasement and associated riprap repair to rehabilitate the existing pier of 358 SF. The total linear length of the rehabilitated pier is 50 LF along the river channel. The net total permanent impact area is 358 SF.

3. The type and classification of the wetlands involved.

The project wetland involved is the Connecticut River with a classification of Riverine, lower perennial, unconsolidated bottom, permanently flooded - R2UBH and NHDES jurisdictional river bank.

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

The Connecticut River is the low point of the watershed area relative to the nearby wetlands and surface waters and is the only wetland impacted by this project.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

The Connecticut River is the largest river in the state and is identified as a Designated River. The NH Natural Heritage Bureau (NHB) review – Exhibit D - did not identify any rarity of the wetlands or surface waters.

The project area is not located in a tidal area.

6. The surface area of the wetlands that will be impacted.

The surface area for the construction trestle and cofferdams in New Hampshire is 50,014 SF and the Vermont trestle portion is 8,777 SF, which are temporary impacts.

A temporary construction access from NH upon lot 22 is proposed to access the river and temporary trestle in the river to conduct the rehabilitation of the existing pier will impact 125 SF of bank during construction.

The project includes temporary bank impacts of 324 SF and channel (below OHW) impacts of 262 SF in New Hampshire (586 SF total) to repair the existing riprap slope at the bridge abutment within the original riprap footprint of the 1937 bridge design. A copy of the original 1937 riprap design detail sheet is included in the attached amended application plan set.

The proposed bridge pier rehabilitation will be permanent impact of 358 SF resulting from the proposed rehabilitation concrete encasement of the existing pier and associated riprap repair.

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NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

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7. The impact on plants, fish and wildlife including, but not limited to:
- a. Rare, special concernspecies;
 - b. State and federally listed threatened and endangered species;
 - c. Species at the extremities of their ranges;
 - d. Migratory fish andwildlife;
 - e. Exemplary natural communities identified by the DRED-NHB;and
 - f. Vernal pools.

(a, b, c) A recent NH Natural Heritage Bureau (NHB) review – Exhibit D – and a US Fish and Wildlife Service (USFWS) IPAC review - Exhibit E - relative to the presence of Federal or State listed threatened and endangered or rare species, or natural communities of special or exemplary status was conducted for the project area. The USF&WS IPAC consultation review indicated Dwarf Wedgemussel (*Alasmidonta heterodon*) and Northern Long-eared Bat (*Myotis septentrionalis*), may occur in the project area.

A freshwater mussel survey in the Connecticut River within the project area was conducted on August 15 and 16, 2018 with none of the mussel species observed being federally or state listed. In addition, the recent NHB Data Check for the project area indicated that there are only historical records in the project area, and that several field surveys over the past 15 years by the Vermont Heritage Bureau failed to locate Dwarf Wedgemussel and the species is ‘presumed extirpated’. The NHDOT, on behalf of the FHWA, has determined that a finding of no effect on the Dwarf Wedgemussel is appropriate for this project. The letter noting the “no effect” determination (October 2, 2018) provided to the USFWS New England Field Office is located in Exhibit F.

The NHDOT has coordinated with the USFWS New England Field Office and has received a letter of concurrence (dated September 5, 2018) with the finding that the project may rely on the Northern Long-eared Bat and NLEB Programmatic Biological Opinion (PBO) and that the project will have no effect to the NLEB. A bridge inspection conducted in August 2018 found no evidence of bat use at the project site. A copy of the consistency letter from USFWS is located in Exhibit G.

(d) The project will not impact migratory fish or wildlife. See correspondence from NOAA in Exhibit L.

(e.) No exemplary natural communities have been identified in the vicinity of the project. Highest Ranked Habitats and Conservation Focus Areas, per the NH Wildlife Action Plan, do not exist in or near the project area. See attached NHF&G map in Exhibit M .

(f) No vernal pools are present in the project area.

8. The impact of the proposed project on public commerce, navigation, and recreation.

The proposed project will have temporary impacts on public commerce during construction with the closure of the bridge and detours north and south. currently trucks over 15 tons are detoured north or south. Upon completion, the project will fully restore public commerce with the restoration of the bridge to full legal load limits and removal of the truck detour.

The proposed project will have temporary impacts to navigation and recreation along the westerly portion of the Connecticut River within the project areas due to the installation of the trestles and a cofferdam during construction. Navigation and recreation along the easterly side of the river will not be impacted and is to be maintained. Federal Highway (FHWA) on behalf of NHDOT corresponded to the US Coast Guard relative to the proposed rehabilitation and a permit is not required. See Exhibit N.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

Temporary interference of the aesthetic interests of the general public is anticipated during the 2-year construction period with the proposed rehabilitation work to the bridge and pier and the encapsulation of the bridge during painting. As part of the Memorandum of Agreement (MOA) relative to the historic integrity of the bridge and bridge pier, the proposed replacement pier is to be similar to the existing pier and would preserve the existing aesthetic interest of the general public upon completion. The proposed painting of the existing bridge would likely provide an aesthetic improvement to the general public in the project area upon completion. A copy of the Adverse Effects Memo (Exhibit H) and Memorandum of Agreement (Exhibit I) are provided in application information.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The proposed project will temporarily interfere and obstruct public rights of passage with the closure of the existing bridge during construction and detouring traffic north and south of the project area during the 2-year construction period. Currently trucks over 15 tons are detoured north and south, due to the existing bridge load limits, and some public rights of passage and access in the project area are currently obstructed and interfered. Upon completion of the project and restoration of the bridge to full legal load limits, interference, and obstructions of the public rights of passage and access will be restored in the project area.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

The proposed project is not intended to impact abutting owners upon completion of the bridge rehabilitation project. All disturbed areas adjacent to the abutting owners will be restored to the current conditions upon completion. However, during construction abutting property owners are likely to be impacted due the adjacent construction activities and closure of the bridge and use of detours to access the adjacent Town across the river.

12. The benefit of a project to the health, safety, and well-being of the general public.

Upon completion of the bridge rehabilitation project, the general public's health, safety, and well-being will be benefitted. The bridge will be restored to full legal loads to address public safety. Access between the adjacent communities for large/heavy vehicles including emergency vehicles will be restored to address health and well-being.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

The bridge rehabilitation project is not intended to impact/change the quantity or quality of the surface or ground water or change the amount of drainage entering the project site or the amount exiting the site. The existing drainage patterns (flow to the river) are to be maintained unchanged upon completion of the project.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

The project will implement standard erosion control measures on land to reduce the potential for erosion and sedimentation. A cofferdam with a silt boom curtain is to be used for the proposed pier construction to reduce the potential for sedimentation in the river. The proposed change to the pier, minor increase in size, is estimated to be less than 1% of the total cross-sectional area of the 100-year floodplain under the bridge. The proposed change to the existing pier is not anticipated to increase the potential for flooding upon completion of the project. As part of the project, the NH Office of Energy and Planning was consulted – See Exhibit O. A memorandum relative to the proposed change to the pier is provided in Exhibit P.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The project proposes to rehabilitate the existing bridge pier in the river with one that is slightly larger and longer. The area of the rehabilitated pier will increase by 358 SF that includes an increased length of 4 feet (46 feet existing to 50 feet proposed) and increased width of 3 feet (existing 8 feet to proposed 11 feet). The bridge abutment embankment repair totaling 586 SF will be within the original riprap footprint. It is anticipated the project will not change the river current or wave energy from the original construction conditions.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

The project proposes mostly temporary impacts, including repair of the existing riprap embankment slope within the original footprint at the NH bridge abutment, and only minor permanent impacts (358 SF) to the river for the rehabilitation of the existing bridge pier. Due to the uniqueness of this project, it is unlikely that abutters would seek to impact the Connecticut River to the same extent. However, should abutters seek to impact the river in a similar fashion, we would anticipate incremental permanent impacts to the river that would affect the functions and values provided by the river.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

The project proposes temporary impacts to the river and the river surface with the installation of temporary trestles and a cofferdam at the pier during construction that are not anticipated to impact the values and functions of the total river (wetland) upon completion. Some minor shading of the river in the vicinity of the temporary trestle is anticipated along with temporary river impacts for the piles supporting the trestle during construction, but upon completion of the project, the temporary shading and piles will be removed, and the river restored to the current condition.

Temporary river bank impacts are also anticipated during construction and the impact areas are to be restored to the current conditions upon completion of the rehabilitation work to the bridge abutments.

The construction of the rehabilitation encasement to the existing bridge pier will likely involve a temporary cofferdam to allow construction of the pier encasement. The small increase in size to the existing pier is not anticipated to impact the existing values and functions of the river.

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

There are no National Landmarks in proximity to this site.

The existing bridge is eligible for National Register and a Memorandum of Agreement (MOA) with the State of NH, State of Vermont and FWHA for the proposed bridge rehabilitation work has been executed. A copy of the Adverse Effect Memo (Exhibit H) and executed MOA (Exhibit I) are included in application submission.

19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

The portion of the Connecticut River that flows through the project area is Designated River under RSA 483 of the New Hampshire River Management and Protection Program as identified as a "Rural" river. The proposed rehabilitation of the existing bridge is intended to retain the value of the area by preserving and rehabilitating the existing bridge. In accordance with RSA 483, a copy of this wetland application is being sent to the Connecticut River Joint Commissions - Upper Valley Subcommittee for their review.

20. The degree to which a project redirects water from one watershed to another.

The project does not redirect water from one watershed to another.

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

This wetland permit amendment is to address the following updates:

- The change to the river access from Vermont to New Hampshire at lot 22 (319 River Road) and the associated impacts under the final design. A copy of the temporary construction easement upon lot 22 for the temporary river access is provided as Exhibit V;
- To clarify the change to the bridge pier work from removal of the pier to rehabilitation of the existing pier under the final design. The amount of permanent impact associated with the pier work is unchanged;
- To clarify the proposed bridge repair/rehabilitation construction will not include a bridge slide and the bridge will remain in place for the rehabilitation work under the final design;
- To clarify the repair work needed to existing riprap embankment at the New Hampshire bridge abutment within the original 1937 riprap design footprint above and below the currently observed OHW line under final design;
- To include the changes to the stormwater system and relocated outlet pipe from the north side to the south side at the New Hampshire bridge abutment under final design.

The total amount of wetland impact is unchanged, and no additional fee is required. The amount of permanent impact is unchanged at 358 SF under the final design. With this amendment, there is additional temporary impact associated with the repair to the existing riprap embankment at the NH bridge abutment area within the 1937 riprap design footprint. This work is located above and below the current OHW line, which has increased from the original elevation at the time of bridge completion in 1937, approximately 8 feet higher with the 1950 construction of the Wilder Dam located downstream of the project. These two existing riprap embankment temporary impact areas are identified in the amendment. A copy of the original riprap detail sheet (Revised January 8, 1937) is included in the updated plan set as sheet 12, and two 1937 construction photographs are provided in Exhibit W. There are additional temporary bank impacts for the temporary access from the New Hampshire side of the river at lot 22. A wetland delineation was conducted for the temporary access area on the abutting parcel and a report is included in Exhibit S. The small additional temporary bank impact area for the temporary NH access (125 SF) is compensated with an approximate 4-inch reduction in width of the original 130 ft wide trestle to meet the intent of minimizing impacts to the extent practical (resulting in a net zero change in temporary impacts project wide) and to avoid the need for additional fees. Also, the relocation of the stormwater outlet to the downstream side of the bridge will alleviate concerns with the stormwater outlet adjacent to the "Toll House". The above noted changes to the permit under this amendment are incorporated in the attached and updated documents. Note that any unchanged exhibits have not been included in this amendment.

A separate Shoreland Permit Application for the temporary NH access is forthcoming.

Bridge Rehabilitation**Env-Wt. 904.09 Alternative Design Amended
TECHNICAL REPORT**

Env-Wt 904.09(a) - If the applicant believes that installing the structure specified in the applicable rule is not practicable, the applicant may propose an alternative design in accordance with this section.

Please explain why the structure specified in the applicable rule is not practicable (Env-Wt 101.74 defines practicable as *available and capable of being done after taking into consideration costs, existing technology, and logistics in light of overall project purposes.*)

This document addresses compliance with Env-Wt 900 “Stream Crossings”. The Connecticut River has a watershed area of 276 square miles which makes this bridge a Tier 3 stream crossing. The project involves rehabilitating the existing steel truss bridge. As discussed at the March 20, 2019 NHDOT Natural Resources meeting at the NHDOT office in Concord, the project involves rehabilitating the existing historic bridge structure, which now includes the rehabilitation of the existing pier located in the river under this amendment. The work includes reconstruction of the rockfill slopes in front of the abutment walls. The final grades after reconstruction are intended to meet the existing grades. The work will also involve temporary bank impacts and temporary trestles placed in the river to allow access from New Hampshire to the bridge pier in the river and access the Vermont abutment. A temporary cofferdam will be used for the rehabilitation work to the existing pier. A Summary of the NHDOT Natural Resources meeting minutes has been provided with the wetland application.

The existing bridge passes the 100-year storm event. With the proposed improvements, including a rehabilitated and enlarged pier that is 358 SF larger than the existing, the bridge will pass the 100-year storm event with no measurable change in water surface elevation.

The rehabilitation of the existing bridge results in the least amount of construction and environmental impacts; and it is the least costly alternative relative to construction costs. The project did consider full replacement alternatives for replacement with without impact to historic integrity or replacement in another location downstream. While these alternative would be in compliance with the NH Stream Crossing Guidelines, they were dismissed due to the substantial increase in environmental and property impacts, utility impacts, significant construction constraints, as well as higher construction costs as compared to the proposed rehabilitation. Therefore, adhering to the requirements of a fully compliant crossing is not practicable.

The no build alternative will not address the existing bridge which is in ‘fair’ condition, and without any improvements its condition will continue to decline to poor, eventually forcing the bridge to be closed. Therefore, this alternative was rejected.

The proposed alternative meets the specific design criteria for Tier 2 and Tier 3 crossings to the *maximum extent practicable*, as specified below.

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings – New Tier 2 stream crossings, replacement Tier 2 crossings that do not meet the requirements of Env-Wt 904.07, and new and replacement Tier 3 crossings shall be designed and constructed:

Bridge Rehabilitation**Env-Wt. 904.09 Alternative Design Amended
TECHNICAL REPORT**

(a) In accordance with the NH Stream Crossing Guidelines.

*The NH Stream Crossing Guidelines recommend that the crossing should be a span structure with a width of $1.2 \times \text{Bankfull Width} + 2 \text{ feet}$. The proposed rehabilitation will retain the existing abutments and single pier design. There is no change to the total span of the bridge. **This criteria will not be met under the guidelines.***

(b) With bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing.

The bed forms and streambed characteristics will remain the same as they are today upon completion of the project.

(c) To provide a vegetated bank on both sides of the watercourse to allow for wildlife passage.

*The project will restore the existing riprap on the river banks under the bridge. **This criteria will not be met under the guidelines.***

(d) To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the functioning of the natural floodplain.

The project does not change the current river channel alignment or gradient.

(e) To accommodate the 100-year frequency flood, to ensure that (1) there is no increase in flood stages on abutting properties; and (2) flow and sediment transport characteristics will not be affected in a manner which could adversely affect channel stability.

The existing bridge passes the 100-year frequency flood and the bridge with the proposed improvements will continue to pass the 100-year storm event. No increase in flood stage is anticipated.

(f) To simulate a natural stream channel.

The project does not propose to alter the natural stream channel upon completion. Temporary impacts to the stream channel will occur during construction.

(g) So as not to alter sediment transport competence.

Sediment transport competence will not be altered under the project.

Env-Wt 904.09(c)(3) – The alternative design must meet the general design criteria specified in Env-Wt 904.01:

Env-Wt 904.01

(a) Not be a barrier to sediment transport;

Sediment transport is accommodated by the existing bridge and will continue to be accommodated at this crossing.

(b) Prevent the restriction of high flows and maintain existing low flows;

High and low flows are accommodated at this crossing and will continue to be accommodated with the bridge improvements.

Bridge Rehabilitation

**Env-Wt. 904.09 Alternative Design Amended
TECHNICAL REPORT**

(c) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction;

There will be no obstructions or disruptions to the movement of aquatic life indigenous to the waterbody beyond the duration of construction.

(d) Not cause an increase in the frequency of flooding or overtopping of banks;

The bridge improvements will not cause an increase in the frequency of flooding or overtopping of banks.

(e) Preserve watercourse connectivity where it currently exists;

Watercourse connectivity exists today and will continue to exist with the bridge improvements.

(f) Restore watercourse connectivity where: (1) Connectivity previously was disrupted as a result of human activity(ies); and (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

Not applicable to this project.

(g) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and

The existing bridge does not cause erosion, aggradation, or scouring upstream or downstream of the crossing, nor will it upon completion of construction. The existing riprap on the river banks under the bridge will be restored upon completion of the project.

(h) Not cause water quality degradation.

The proposed bridge improvements will not cause water quality degradation. Erosion and sediment controls will be utilized during construction to protect water quality in the Connecticut River.

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: mike leach, Stantec Consulting Services, Inc.
5 Dartmouth Drive - Suite 200

auburn, NH 03032

From: NH Natural Heritage Bureau

Date: 6/14/2021 (valid until 6/14/2022)

Re: Review by NH Natural Heritage Bureau of request submitted 6/1/2021

Permits: NHDES - Shoreland Standard Permit, NHDES - Wetland Standard Dredge & Fill - Major, USACE - General Permit, USCEQ - Federal: NEPA Review

NHB ID: NHB21-1856

Applicant: mike leach

Location: Lyme
East Thetford Road

Project Description: Proposed rehabilitation of existing steel truss bridge over the Connecticut River between Lyme NH and Thetford VT

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 6/1/2021 5:41:56 PM, and cannot be used for any other project.

New Hampshire Natural Heritage Bureau NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: NHB21-1856

NHB21-1856

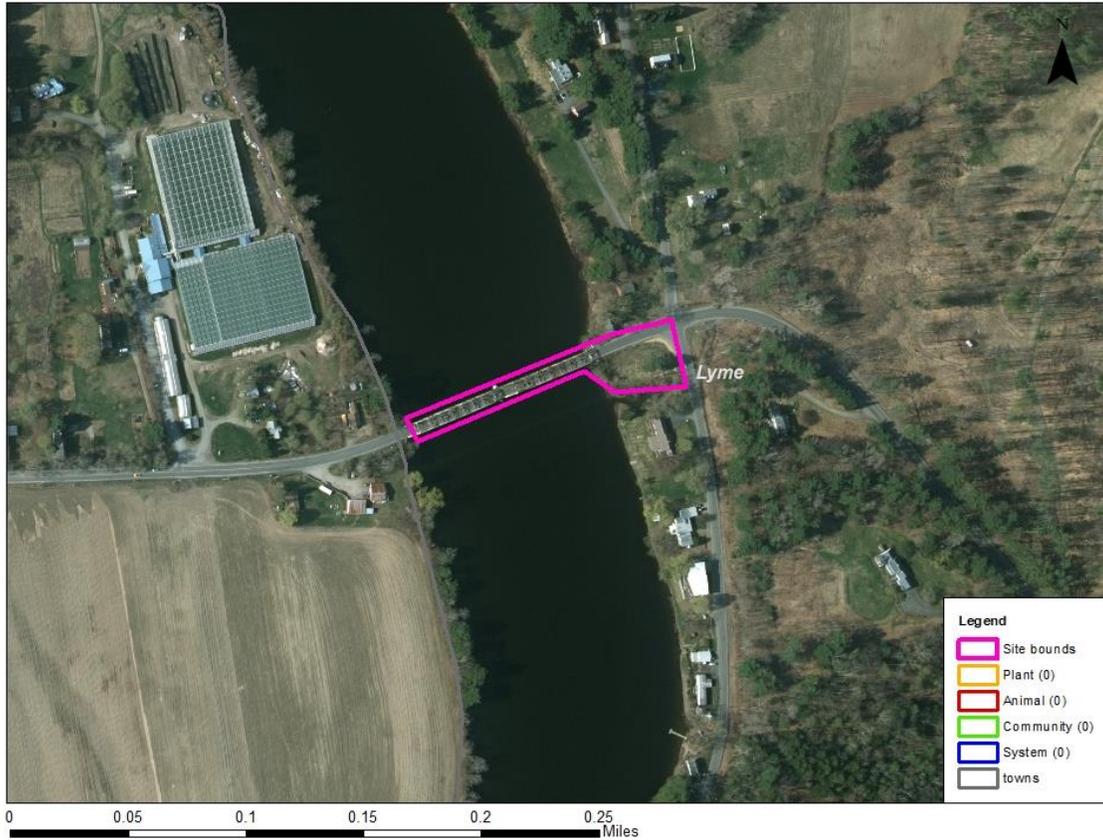


Exhibit K

Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation Wetlands Permit Application



Photo 1 – View from NH shoreline downstream of bridge looking northwesterly and upstream at areas of proposed temporary trestles during reconstruction.



Photo 2 – View from VT shoreline looking easterly toward pier and NH shoreline at proposed areas of temporary trestles during reconstruction.

Exhibit K

Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation Wetlands Permit Application



Photo 3 – View from top of existing bridge pier looking easterly toward NH shoreline and proposed temporary trestle location adjacent to pier and temporary bank impacts during reconstruction.



Photo 4 – View from NH shoreline westerly toward VT shoreline of area of proposed temporary trestle location in VT.

Exhibit K

Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation Wetlands Permit Application



Photo 5 – View from NH shoreline looking northerly at existing river, river bank and bridge abutment to be temporary impacted during reconstruction.



Photo 6 – View from VT shoreline looking westerly at existing river bank and bridge abutment to be temporary impacted during reconstruction.

Exhibit K

Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation Wetlands Permit Application



Photo 7 – Closeup view looking westerly at the NH Side of the existing deteriorated pier.



Photo 8 – Closeup view looking easterly at the VT side of the existing deteriorated pier.

Exhibit K

Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation Wetlands Permit Application



Photo 9 – View looking downstream of the westerly portion of the existing bridge and proposed area of temporary trestle during bridge and pier reconstruction located in NH and VT and temporary VT river bank impact during reconstruction.

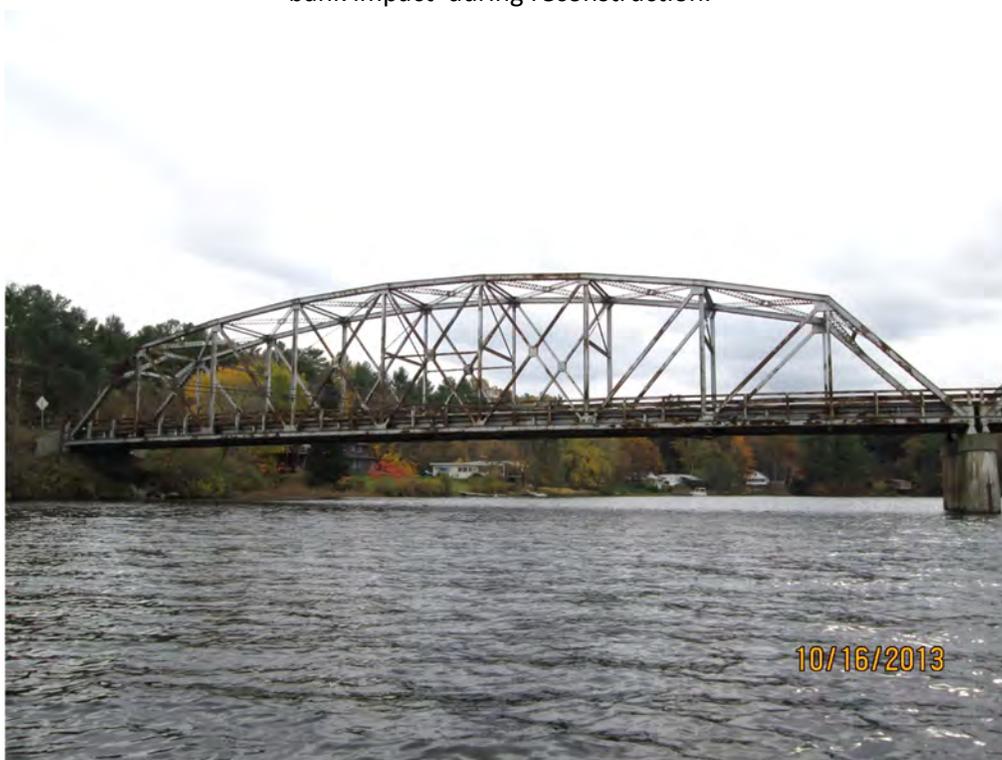


Photo 10 – View looking downstream of the easterly portion of the existing bridge and proposed area of temporary trestle adjacent to existing pier during pier reconstruction and temporary NH river bank impacts during reconstruction.

Exhibit K

Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation Wetlands Permit Application

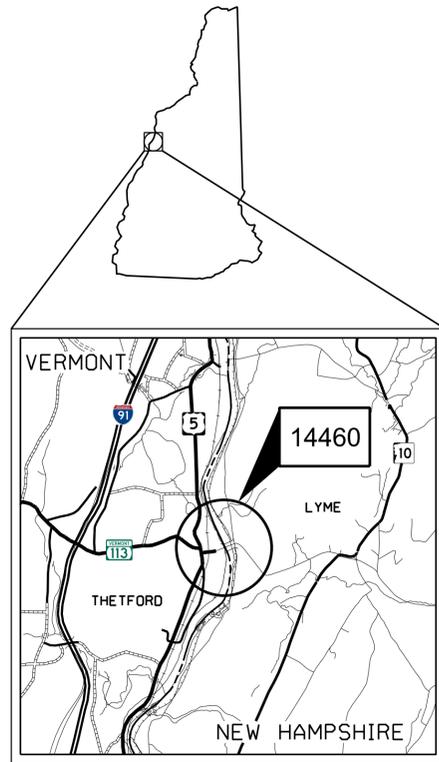


Photo 11 – View looking downstream of the easterly river embankment area and proposed area of temporary construction access at lot 22, bulkhead and trestle during bridge and pier reconstruction. Taken 02-01-2021.

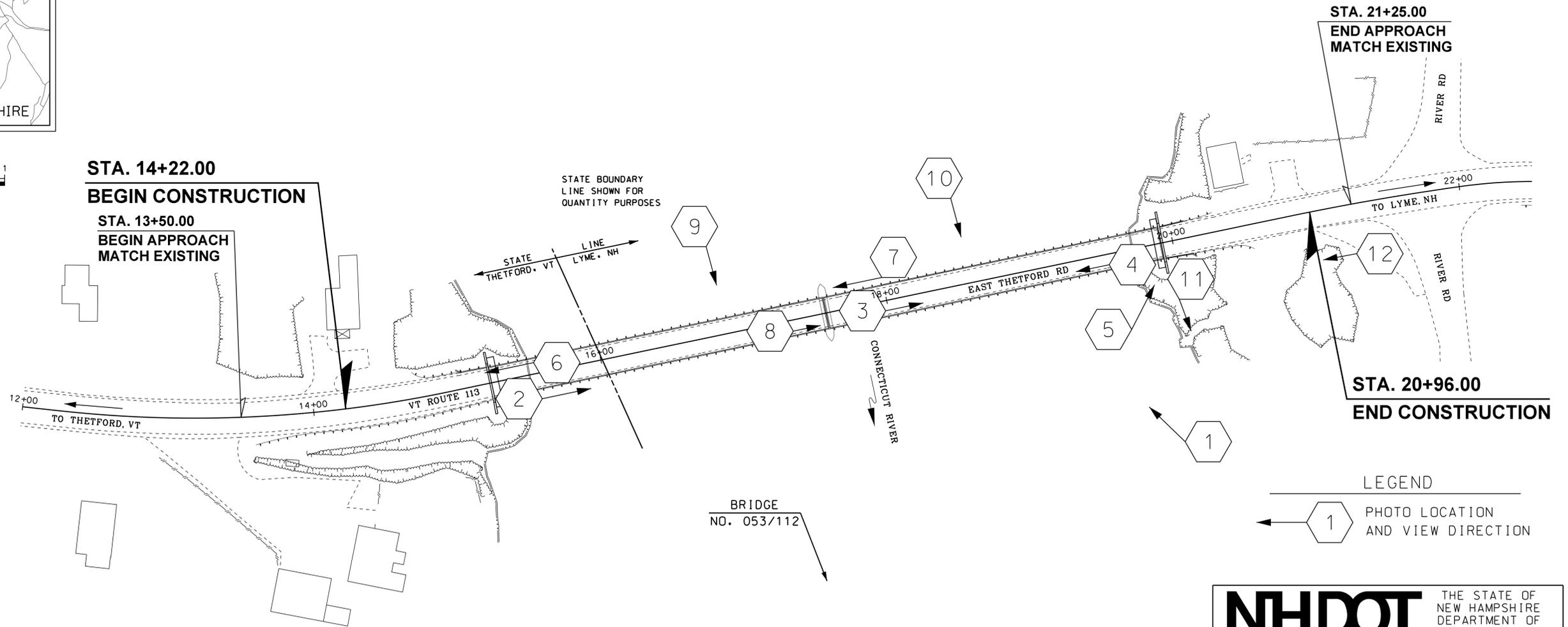


Photo 12 – View looking westerly along the southerly side of the bridge and location of the temporary access drive to the river upon lot 22 for the bridge and pier reconstruction and stormwater construction to relocate the outlet. Taken 02-01-2021.

WETLANDS PHOTO PLAN



LOCATION MAP



**STA. 20+96.00
END CONSTRUCTION**

**STA. 21+25.00
END APPROACH
MATCH EXISTING**

LEGEND

 1 PHOTO LOCATION AND VIEW DIRECTION

DRAWN BY: TJG
 CHECKED BY: DEM
 DATE 06/2021
 DATE 06/2021

PLANS PREPARED BY:
STANTEC CONSULTING SERVICES, INC
 5 DARTMOUTH DR, SUITE 200, AUBURN, NH 03032
 TEL (603) 669-8672 FAX (603) 669-7636

LYME, NH - THETFORD, VT
 COUNTIES OF GRAFTON, NH - ORANGE, VT
 SCALE: 1" = 40'



NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION			
RECOMMENDED FOR APPROVAL:			
_____ DIRECTOR OF PROJECT DEVELOPMENT		_____ DATE	
APPROVED:			
_____ ASSISTANT COMMISSIONER AND CHIEF ENGINEER		_____ DATE	
FEDERAL PROJECT NO. A000(394)	STATE PROJECT NO. 14460	SHEET NO. 1	TOTAL SHEETS 1



Memo

To:	Project File Auburn, NH	From:	Gerard Fortin, PE Senior Principal Auburn, NH
File:	195311395 Lyme, NH – Thetford, VT East Thetford Road over the Connecticut River	Date:	April 12, 2018 Revised June 3, 2021

Reference: Assessment of Floodplain Impact – Bridge Rehabilitation Project

The rehabilitation of the Lyme -Thetford bridge involves the following work within the 100-year floodplain of the Connecticut River including:

- Rehabilitation of the existing pier which is approximately 3 feet wider.
- Reconstruction of the rockfill slopes in front on the abutment walls. The final grades after reconstruction are intended to meet the existing grades.

The 100-year floodplain is at elevation 400.5. The work related to the rehabilitation of the bridge and existing pier will have a negligible impact on floodplain elevation.

STANTEC CONSULTING SERVICES INC.

A handwritten signature in black ink, appearing to read "G Fortin", written over a light blue horizontal line.

Gerard J Fortin, PE
Senior Principal

Phone: (603) 669-8672
Fax: (603) 669-7636
Gerard.fortin@stantec.com

c. Michael Leach
Stantec



Stantec Consulting Services Inc.
30 Park Drive, Topsham, ME 04086-1737

June 9, 2021
File: 179450395

Attention: Michael Leach
Stantec Consulting Services Inc.
5 Dartmouth Drive, Suite 200
Auburn, NH 03032-3984

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

Dear Michael,

On May 28, 2021, Stantec conducted a wetland and watercourse delineation of a proposed temporary construction access route to the Connecticut River next to the Lyme, New Hampshire/East Thetford, Vermont Bridge (Project area). The Project area is located on the south side of East Thetford Road along the Connecticut River and west of River Road, in Lyme, New Hampshire. The access road will be a temporary structure to conduct the rehabilitation of the existing bridge and will be removed upon completion of the work. Wetland boundaries under local, state, and federal jurisdiction were determined using the technical criteria described in the U.S. Army Corps of Engineers (Corps) *Wetlands Delineation Manual*¹ and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*². Wetland boundaries were marked with pink flags and located using a Trimble Global Positioning System (GPS) receiver capable of submeter accuracy. Preliminary jurisdictional determinations made during the wetland delineations were based on the criteria set forth in the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau Administrative Rules. Watercourses (e.g., streams) identified during the delineations were identified based on the definitions in NHDES Certified Administrative Rules Env-Wt. 104.48 as well as the technical guidance available from the Corps on the identification of an Ordinary High Water Mark (OHWM)³ and definition of a tributary as described in the Clean Water Act⁴. Data was collected on flow regime, bankfull and OHWM widths, dominant substrates, and evidence of biological use. GPS data were used to produce Figure 1 (Attachment A). Representative site photographs are provided in Attachment B.

Stantec also performed a wetland functional assessment of watercourses identified within the Project area. The functional assessment was conducted in accordance with New Hampshire Wetland Rules Env Wt. 311.10.

Stantec conducted a shoreland assessment of the vegetation within the waterfront buffer and woodland buffer of the Project area along the Connecticut River. The shoreland assessment of vegetation was conducted in accordance with the Shoreland Water Quality Protection Act (SWQPA; RSA 483-B), which

¹ Environmental Laboratory. 1987. Corps of Engineers *Wetlands Delineation Manual*. Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

² U.S. Army Corps of Engineers. 2011. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

³ U.S. Army Corps of Engineers. 2005. *Regulatory Guidance Letter: Ordinary High Water Mark Identification*. December 8, 2005. No. 05-05.

⁴ U.S. Army Corps of Engineers. 2020. 85 Code of Federal Regulations, Part 22250, "Waters of the United States". April 21, 2020.

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

regulates the removal of vegetation within 150 feet of public waters. Grid segments were established on the existing Figure 1 (Attachment A) for reference to estimate the number of trees and shrubs to be removed.

SITE DESCRIPTION

The Project area is located on the south side of East Thetford Road along the Connecticut River and west of River Road, in Lyme, New Hampshire, and includes most of vacant Lot 22 on Lyme Assessor Map 403. The Project area contains an existing utility easement running east to west on the southern portion. A large portion of the Project area has been maintained as open lawn next to River Road and the utility easement. The remaining upland area is dominated by a few scattered trees that include box elder or ash-leaf maple (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), American basswood (*Tilia americana*), red maple (*Acer rubrum*), black cherry (*Prunus serotina*), American elm (*Ulmus americana*), and black locust (*Robinia pseudoacacia*). Dominant species of shrubs observed within the Project area include staghorn sumac (*Rhus hirta*), and several non-native invasive species including Morrow's honeysuckle (*Lonicera morrowii*), glossy false buckthorn (*Frangula alnus*), and winged euonymus (*Euonymus alatus*). Herbaceous vegetation included evergreen wood fern (*Dryopteris intermedia*), ostrich fern (*Matteuccia struthiopteris*), hairy Solomon's seal (*Polygonatum pubescens*), and zigzag goldenrod (*Solidago flexicaulis*). There are also some fox grape (*Vitis labrusca*) vines and patches of poison ivy (*Toxicodendron radicans*).

The U.S. Department of Agriculture Soil Survey of Grafton County, New Hampshire⁵, has mapped two primary soil types in this area: Winooski silt loam (moderately well drained) and Dartmouth silt loam (moderately well drained). Topography gradually slopes west from River Road to the Connecticut River and south toward a wetland depression adjacent to the utility easement.

WETLAND DELINEATION RESULTS

Stantec identified the top-of-bank along the eastern shore of the Connecticut River and a backwater depression with wetland characteristics within the Project area. The top-of-bank coincided with the observed OHWM of the river and the perimeter of the backwater depression at the time of the survey. Evidence of the OHWM include a natural line impressed on the bank, undercutting of the bank, and presence of debris.

The backwater depression includes a palustrine unconsolidated bottom (PUB)⁶ and emergent (PEM) community that was flooded at the time of the survey. No trees or shrubs were observed within the depression. Dominant herbaceous vegetation includes American burr-reed (*Sparganium americanum*), sensitive fern (*Onoclea sensibilis*), and spotted touch-me-not (*Impatiens capensis*). Hydric soils were indicated by 8 to 10 inches of mucky, organic material directly over a depleted matrix. Hydrology indicators present at the time of the delineation included 12 to 24 inches of standing water, a high-water table, saturation at the soil surface, inundation visible on aerial imagery, and geomorphic position. Due to the position of the backwater depression, observation of a top of bank, and the level of inundation observed at the time of the survey, Wetland W01CFA was delineated as part of the Connecticut River. The wetland determination data forms are provided in Attachment C.

⁵ Web Soil Survey, Natural Resources Conservation Service, United States Department of Agriculture. Available at: <http://websoilsurvey.nrcs.usda.gov/> [accessed June 2021].

⁶ Federal Geographic Data Committee. 2013. *Classification of Wetlands and Deepwater Habitats of the United States. FGDC-STD-004-2013*. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

June 9, 2021
Michael Leach
Page 3 of 5

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

WETLAND FUNCTIONAL ASSESSMENT

Stantec performed a wetland functional assessment of the watercourses within the Project area. Potential impacts include the construction of a temporary access ramp for the rehabilitation of the existing bridge over the Connecticut River. Stantec conducted the functional assessment to provide additional information on the Connecticut River.

Wetland and watercourse functions and values were evaluated through direct field observation and a review of existing public data resources following the Corps *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach*⁷ and the New Hampshire Method for evaluating the Ecological Integrity of the wetland and stream (RSA 482-A:2, XI). The Wetland Functional Assessment Worksheet and required wildlife and vegetation list is included in Attachment D. The required wetland delineation plans and photographs are included in attachments A and B, respectively. Ecological Integrity, Fish & Aquatic Life Habitat, Flood Storage, Sediment Trapping, Uniqueness/Heritage, Wetland-based Recreation, and Wetland-dependent Wildlife Habitat were determined to be the principal functions of the Connecticut River.

SHORELAND ASSESSMENT RESULTS

Stantec identified and measured the diameter of a total of 138 trees and shrubs within the Project area along the shore of the Connecticut River. Several of the trees and shrubs are single stems originating from a tree or shrub with multiple stems. A total of 52 of the trees and shrubs are non-native invasive species. Table 1 (Attachment E) contains the plant identification number, species, diameter at breast height (DBH; at 4.5 feet), and relative point score for each tree and shrub observed. Figure 1 (Attachments A) shows the location of each tree and shrub observed as circular points of different sizes and colors for each score (1 – orange, 5 – yellow, 10 – green, and 15 – blue).

Based on the Construction Access and Right-Of-Way Plan for the State of New Hampshire Department of Transportation, the proposed temporary access ramp to the Connecticut River would be approximately 20 to 30 feet wide and located south of East Thetford Road and north of the existing utility easement and backwater depression (wetland W01CFA) identified within the Project area. Approximately 32 trees and shrubs with a DBH of 1 inch or greater were identified within the proposed area for the access ramp (center segment Figure 1); 19 of these trees and shrubs were non-native invasive species.

REGULATORY DISCUSSION

The Corps and NHDES regulate the wetlands and waterbodies identified within the survey area. Under the provisions of Section 404 of the Clean Water Act, the Corps regulates activities within Waters of the United States, which include navigable waters, such as the Connecticut River, and all their tributaries, adjacent wetlands, and other waters or wetlands where degradation or destruction could affect interstate or foreign commerce. For most projects, the Corps and NHDES review process is merged, unless proposed impacts exceed thresholds reviewable under the NH Programmatic General Permit (e.g., >3 acres of proposed

⁷ U.S. Army Corps of Engineers. 1999. *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach*. U.S. Army Corps of Engineers. New England Division. 32pp. NAEPP-360-1-30a.

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Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

impacts to inland wetlands or waterways), which would require an Individual Permit application review by the Corps.

Wetlands and waterbodies, as well as other protected natural resources, are regulated by NHDES under RSA 482-A and RSA 483-B. A permit from NHDES is required to dredge, fill, or build a structure in a wetland, surface water, or land within 100 feet of a municipally designated prime wetland or tidal waters. Projects proposing jurisdictional impacts of 10,000 square feet or greater will require a compensatory mitigation plan to be submitted to NHDES with the permit application.

NHDES permitting categories are classified as Minimum, Minor, and Major projects. The following provides a general summary of relevant impacts corresponding to the Major Project permitting category, which is likely to apply to a project of this size given the number of wetlands identified on the Project Site:

- Projects that involve alteration of nontidal wetlands, nontidal surface waters, and banks adjacent to nontidal surface waters in excess of 20,000 square feet in the aggregate.
- Projects which, when taken in the aggregate with previous work on the property within the last 5 years, would be considered major. For example, if previous work on the property was fill of 15,000 square feet of nontidal wetlands and an individual applies to fill an additional 15,000 square feet of nontidal wetlands on the property, the application shall be deemed to be for a major project.
- Projects located in or adjacent to prime wetlands.
- Removal of more than 20 cubic yards of rock, gravel, sand, mud, or other material from public waters.
- Projects that alter the course of or disturb 200 or more linear feet of an intermittent or perennial nontidal stream or river channel or its banks.
- Projects in a wetland that have been identified by Natural Heritage Inventory – Department of Resources and Economic Development as an exemplary natural community and/or that has documented occurrences of state or federally listed Endangered or Threatened species.

Activities within 0.25 miles of designated rivers⁸ are regulated under the Shoreland Water Quality Protection Act RSA 483-B. A state Shoreland Permit is required for most new construction, excavation, and filling activities within the Protected Shoreland (250 feet from reference line) of NHDES designated rivers, lakes, and ponds. The Connecticut River is a Designated River identified within the survey area that falls under the jurisdiction of the Shoreland Water Quality Protection Act.

Under RSA 482-A:15 and administrative rules Env-Wt. 700, individual municipalities may elect to designate wetlands as “prime-wetlands” if, after thorough analysis, it is determined that high-quality wetlands are present. Typically, a wetland receives this designation because of its large size, unspoiled character, and ability to sustain populations of rare or threatened plant and animal species. There are no prime wetlands identified in the Town of Lyme.

The NHDES Wetland Rules group selected high-value wetland resource areas into a new category known as “Priority Resource Area” (PRA)⁹. A PRA is an area protected under the Wetlands law, RSA 482-A. A

⁸ NHDES Designated Rivers: <https://www.des.nh.gov/organization/divisions/water/wmb/rivers/designriv.htm>

⁹ NHDES PRA Environmental Fact Sheet: <https://www.des.nh.gov/organization/commissioner/pip/factsheets/wet/documents/wb-25.pdf>

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PRA has one or more of the following characteristics: 1) Protected species or habitat; 2) A bog; 3) Is a wetland in a floodplain of a river where the location has a drainage area of at least 1 square mile or is a tidal area; 4) A designated prime wetland or a duly-established 100-foot buffer to a prime wetland; and/or 5) Is a sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone (Env-Wt. 103.65).

Based on review of the NHDES Wetlands Permit Planning Tool¹⁰ and the results of the wetland and watercourse delineation, no PRA wetlands were identified in the Project area.

Stantec contacted the New Hampshire Natural Heritage Bureau (NHB) to determine the presence/absence of rare wildlife, plant, and/or natural community within the Project area. NHB determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, they do not expect that it will be impacted by the proposed project.

Stantec recommends further consultation with the local municipality to determine what restrictions would be placed on any proposed development within the Project area.

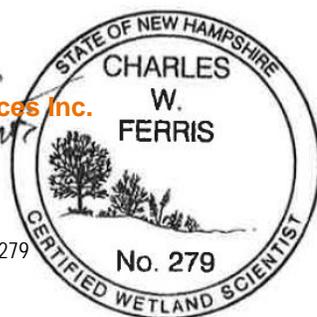
Please contact me if you have any questions about the information contained in this report.

Regards,

Stantec Consulting Services Inc.

Charles W. Ferris

Charles W. Ferris NHCWS #279
 Wetland Scientist



Phone: 207 504 7281
 Fax: 207 729 2715
 chuck.ferris@stantec.com

Attachment: Attachment A – Figure 1. Wetland Delineation and Shoreline Assessment
 Attachment B – Representative Photographs
 Attachment C – Wetland Determination Data Forms
 Attachment D – Wetland Functional Assessment Worksheet
 Attachment E – Table 1: Shoreland Assessment Vegetation Data

¹⁰ NHDES Wetlands Permit Planning Tool:

http://des3.sr.unh.edu/Html5Viewer/Index.html?configBase=http://jointagencyvm.sr.unh.edu/Geocortex/Essentials/des3.sr.unh.edu/REST/sites/Tom__Scratch_Site/viewers/Scratch/virtualdirectory/Resources/Config/Default

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Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

Attachment A – Figure 1. Wetland Delineation and Shoreline Assessment



DRAFT

V:\1956\active\Task Owner and other Non-BC\1956_Jobs\195311620\03_data\gis_cad\gis\MXDs\1794\50395_01_LymeBridgeNHDES.mxd Revised: 2021-06-09 By: rbarbera



Legend

- 150' Woodland Buffer
- 50' Waterfront Buffer
- 25' Vegetation Assessment
- E- Overhead Electrical Wire (approximate)
- Delineated Top of Bank (Connecticut River)
- Delineated Wetland

- Approximate Survey Area
- Tax Parcel
- NHDES Score Based on Plant Diameter at 4.5"**
- 1 = 1" to 3" Diameter
- 5 = >3" to 6" Diameter
- 10 = >6" to 12" Diameter
- 15 = >12" Diameter

N

0 50 Feet
(At original document size of 8.5x11)
1:600

Notes

1. Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet
2. Data Sources: Base data provided by NH GRANIT database
3. Background: Aerial Imagery provided by NH GRANIT, 2015.



Project Location
Lyme, New Hampshire

Prepared by PWB on 2021-06-03
TR Review by KWH on 2021-06-03
IR Review by MPA on 2021-06-03

Client/Project
New Hampshire Department of Transportation
NH DOT Lyme Thetford NEPA

195311620

Figure No.
1

Title
Wetland Delineation and Shoreline Assessment

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Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

ATTACHMENT B – Representative Photographs

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Attachment

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire



Photo 1: View west from River Road. Stantec. May 28, 2021.



Photo 2: View south from East Thetford Road next to Bridge. Stantec. May 28, 2021.

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Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire



Photo 3: View south from Bridge. Stantec. May 28, 2021.

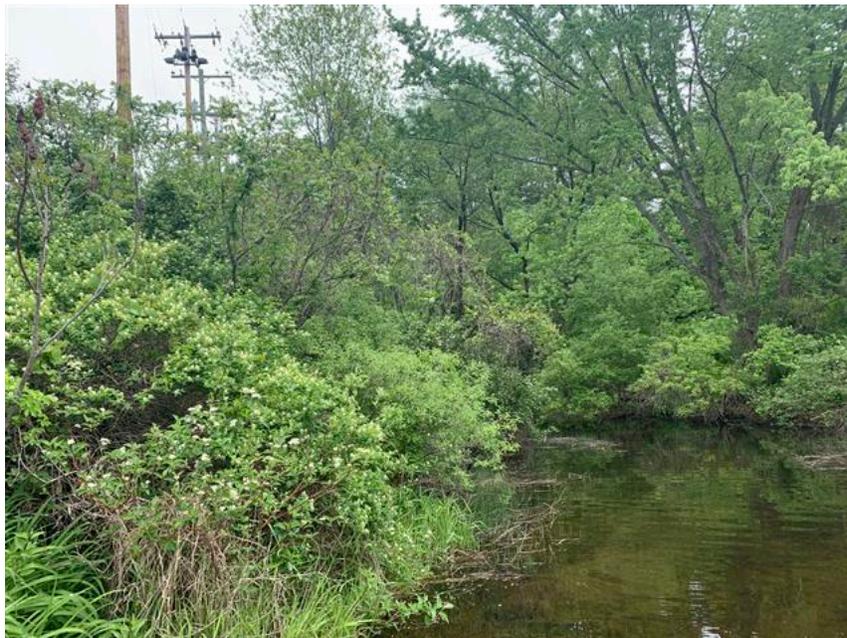


Photo 4: Backwater depression. View east from River. Stantec. May 28, 2021.

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Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire



Photo 5: Backwater depression. View west from end near River Road. Stantec. May 28, 2021.

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Attachment

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

Attachment C – Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Connecticut River Access Ramp City/County: Lyme/Grafton Sampling Date: 5/28/2021
 Applicant/Owner: NHDOT State: NH Sampling Point: Upland
 Investigator(s): Charles Ferris Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Side Slope Local relief (concave, convex, none): Convex Slope (%) 3 - 5
 Subregion (LRR or MLRA): LRR R Lat: 43.812179 Long: -72.181725 Datum: NAD83
 Soil Map Unit Name: _____ NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (if no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> if yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible in Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsley Vegetated Concave Surface (B8)	<input type="checkbox"/> FAC-Neutral Test (D5)

Surface Water Present? Yes _____ No <u>X</u> Depth (inches) _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u> Depth (inches) _____	
Saturation Present? Yes _____ No <u>X</u> Depth (inches) _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: **Upland-W01CFA**

Tree Stratum (Plot Size: 30'radius)

	Absolute % Cover	Dominant Species?	Indicator Status
<u>Acer negundo</u>	<u>30</u>	<u>X</u>	<u>FAC</u>
<u>Fraxinus pennsylvanica</u>	<u>5</u>		<u>FACW</u>
	<u>35</u>	<u>= Total Cover</u>	

Shrub Stratum (Plot Size: 15'radius)

	Absolute % Cover	Dominant Species?	Indicator Status
<u>Lonicera morrowii</u>	<u>10</u>	<u>X</u>	<u>FACU</u>
	<u>10</u>	<u>= Total Cover</u>	

Herb Stratum (Plot Size: 5'radius)

	Absolute % Cover	Dominant Species?	Indicator Status
<u>Polygonatum pubescens</u>	<u>25</u>	<u>X</u>	<u>FACU</u>
<u>Impatiens capensis</u>	<u>20</u>	<u>X</u>	<u>FACW</u>
<u>Matteuccia struthiopteris</u>	<u>10</u>		<u>FAC</u>
<u>Dryopteris intermedia</u>	<u>10</u>		<u>FAC</u>
	<u>65</u>	<u>= Total Cover</u>	

Woody Vine Stratum (Plot Size: 30'radius)

	Absolute % Cover	Dominant Species?	Indicator Status
_____	_____	_____	_____
	_____	<u>= Total Cover</u>	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 4 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index Worksheet:

OBL species 0 x 1 0
 FACW species 25 x 2 50
 FAC species 50 x 3 150
 FACU species 35 x 4 140
 UPL species 0 x 5 0
 Column Totals 110 (A) 340 (B)
 Prevalence Index = B/A = 3.09

Hydrophytic Vegetation Indicators:

- _____ 1- Rapid Test For Hydrophytic Vegetation
- _____ 2- Dominance Test is > 50%
- _____ 3- Prevalence Index is =< 3.0
- _____ 4- Morphological Adaptations
- _____ 5- Problematic Hydrophytic Vegetation

Definitions of Vegetation Strata:

Tree- Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub- Woody plants less than 3 in. DBH and greater than or equal to 3.28ft (1m) tall.

Herb- All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28ft tall.

Woody Vines- All woody vines greater than 3.28ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: **Upland-W01CFA**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color	%	Color	%	Type	Loc		
0-20	2.5Y	3/3 100					Silt Loam	

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (B15)
- Thin Dark Surface (S9)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Soils:

- 2 cm Muck (A10)
- Coast Prairie Redox (A16)
- 5 cm Mucky Peat or Peat (S3)
- Dark Surface (S7)
- Polyvalue Below Surface (S8)
- Thin Dark Surface (S9)
- Iron-Manganese Masses (F12)
- Piedmont Floodplain Soils (F19)
- Mesic Spodic (TA6)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Connecticut River Access Ramp City/County: Lyme/Grafton Sampling Date: 5/28/2021
 Applicant/Owner: NHDOT State: NH Sampling Point: Wetland
 Investigator(s): Charles Ferris Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%) 0 - 1
 Subregion (LRR or MLRA): LRR R Lat: 43.812142 Long: -72.181722 Datum: NAD83
 Soil Map Unit Name: _____ NWI Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (if no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ if yes, optional Wetland Site ID: <u>W01CFA</u>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Surface Water (A1)	Drainage Patterns (B10)
_____ Water-Stained Leaves (B9)	Moss Trim Lines (B16)
<input checked="" type="checkbox"/> High Water Table (A2)	Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Saturation (A3)	Crayfish Burrows (C8)
_____ Water Marks (B1)	Saturation Visible in Aerial Imagery (C9)
_____ Sediment Deposits (B2)	Stunted or Stressed Plants (D1)
_____ Drift Deposits (B3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
_____ Algal Mat or Crust (B4)	Shallow Aquitard (D3)
_____ Iron Deposits (B5)	Microtopographic Relief (D4)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	_____ FAC-Neutral Test (D5)
_____ Sparsley Vegetated Concave Surface (B8)	

Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches) <u>12</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches) <u>0</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches) <u>0</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: **Wetland-W01CFA**

Tree Stratum	(Plot Size: <u>30'</u> radius)	Absolute % Cover	Dominant Species?	Indicator Status
_____ = Total Cover				
Shrub Stratum	(Plot Size: <u>15'</u> radius)	Absolute % Cover	Dominant Species?	Indicator Status
_____ = Total Cover				
Herb Stratum	(Plot Size: <u>5'</u> radius)	Absolute % Cover	Dominant Species?	Indicator Status
<u>Sparganium americanum</u>		<u>15</u>	<u>X</u>	<u>OBL</u>
<u>15</u> = Total Cover				
Woody Vine Stratum	(Plot Size: <u>30'</u> radius)	Absolute % Cover	Dominant Species?	Indicator Status
_____ = Total Cover				

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across All Strata: 1 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

OBL species 15 x 1 15
 FACW species 0 x 2 0
 FAC species 0 x 3 0
 FACU species 0 x 4 0
 UPL species 0 x 5 0
 Column Totals 15 (A) 15 (B)
 Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

- 1- Rapid Test For Hydrophytic Vegetation
- 2- Dominance Test is > 50%
- 3- Prevalence Index is =< 3.0
- 4- Morphological Adaptations
- 5- Problematic Hydrophytic Vegetation

Definitions of Vegetation Strata:

Tree- Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub- Woody plants less than 3 in. DBH and greater than or equal to 3.28ft (1m) tall.

Herb- All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28ft tall.

Woody Vines- All woody vines greater than 3.28ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: **Wetland-W01CFA**

Depth (inches)	Matrix		Redox Features						Remarks
	Color	%	Color	%	Type	Loc	Texture		
0-10	2.5Y 2/1	100						Muck	
10-20	2.5Y 4/1	95	7.5YR 5/6	5	C	M		Fine Sandy Loam	

Hydric Soil Indicators:			Indicators for Problematic Soils:		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (B15)	<input type="checkbox"/> 2 cm Muck (A10)			
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9)	<input type="checkbox"/> Coast Prairie Redox (A16)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7)			
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6)			
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7)		<input type="checkbox"/> Other (Explain in Remarks)			

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
--	---

Remarks:

June 9, 2021
Michael Leach
Attachment

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

Attachment D – Wetland Functional Assessment Worksheet



WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau



[Check the Status of your Application](#)

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: **New Hampshire Department of Transportation**

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the [Coastal Area Worksheet \(NHDES-W-06-079\)](#) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the [Avoidance and Minimization Written Narrative \(NHDES-W-06-089\)](#) and the [Avoidance and Minimization Checklist \(NHDES-W-06-050\)](#) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Residential	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 10, River Road	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Charles W. Ferris NHCWS 279	
DATE(S) OF SITE VISIT(S): 05/28/2021	DELINEATION PER ENV-WT 406 COMPLETED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
CONFIRM THAT THE EVALUATION IS BASED ON: <input checked="" type="checkbox"/> Office and <input checked="" type="checkbox"/> Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"): <input checked="" type="checkbox"/> USACE Highway Methodology. <input type="checkbox"/> Other scientifically supported method (enter name/ title): 	

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SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: W01CFA	LOCATION: (LAT/ LONG) 43.812142/-72.181722
WETLAND AREA: 0.01631	DOMINANT WETLAND SYSTEMS PRESENT: unconsolidated bottom/emergent
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1	COWARDIN CLASS: PUB/PEM
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No if not, where does the wetland lie in the drainage basin? part of Connecticut River	IS THE WETLAND PART OF: <input type="checkbox"/> A wildlife corridor or <input type="checkbox"/> A habitat island? IS THE WETLAND HUMAN-MADE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ARE VERNAL POOLS PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
PROPOSED WETLAND IMPACT TYPE: 	PROPOSED WETLAND IMPACT AREA:
SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
<p>The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:</p> <ol style="list-style-type: none"> 1. Ecological Integrity (from RSA 482-A:2, XI) 2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value) 3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat) 4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration) 5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge) 6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat) 7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal) 8. Production Export (Nutrient) (from USACE Highway Methodology) 9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics) 10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention) 11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization) 12. Uniqueness/Heritage (from USACE Highway Methodology) 13. Wetland-based Recreation (from USACE Highway Methodology: Recreation) 14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat) <p>First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE <i>The Highway Methodology Workbook Supplement</i>. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in <i>The Highway Methodology Workbook Supplement</i>, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.</p>	

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FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
2	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
3	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
4	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
5	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
6	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
7	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
8	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
9	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
10	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
11	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
12	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
13	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
14	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]

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SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of “vernal pool” in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

“Important Notes” are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE “Vernal Pool Assessment” form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: Connecticut River	STREAM TYPE (ROSGEN): A4
HAVE FISHERIES BEEN DOCUMENTED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	DOES THE STREAM SYSTEM APPEAR STABLE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: Recreation, fisheries

The following table can be used to compile data on stream resources. “Important Notes” are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Ecological integrity from NH Method	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Designated River under Rivers Management and Protection Act
2	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Valuable habitat for fish
3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3, 4, 6, 7, 9, 10, 12, 14, 16, 17	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Connecticut River supports fish and shellfish
4	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7, 9, 11, 13	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Connecticut River retains flow from several associated watercourses
5	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 4, 7, 15	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Public and private wells downstream, variable water levels
6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	NA	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No RTE species noted
7	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4, 5, 7, 13	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Waterflow is retained downstream at dam locations
8	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 6, 10, 13	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Fish and shellfish occur in Connecticut River
9	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	View of river from shore
10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 3, 4, 5, 6, 8, 10, 12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Potential sources of sediment occur in watershed, water retention present
11	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 4, 6, 8, 9, 10, 11	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Boating activity present in Connecticut River
12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2, 14, 19, 22, 26, 27, 28, 30	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Designated River under Rivers Management and Protection Act
13	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2, 9	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Boating, fishing within associated Connecticut River
14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6, 7, 8, 20, 21	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fish and shellfish occur in Connecticut River

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

- Wildlife and vegetation diversity/abundance list.
- Photograph of wetland.
- Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.
- For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the [Coastal Area Worksheet \(NHDES-W-06-079\)](#) for more information.

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June 9, 2021
Michael Leach
Attachment

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

Wildlife and Vegetation List

Observed May 28, 2021

Wildlife:

Green frog (*Rana clamitans melanota*)

Vegetation:

American burr-reed (*Sparganium americanum*)

Sensitive fern (*Onoclea sensibilis*)

Spotted touch-me-not (*Impatiens capensis*)

June 9, 2021
Michael Leach
Attachment

Reference: Lyme-Thetford 14460 Permitting Amendment Wetland Delineation and Shoreland Assessment Results, Lyme, New Hampshire

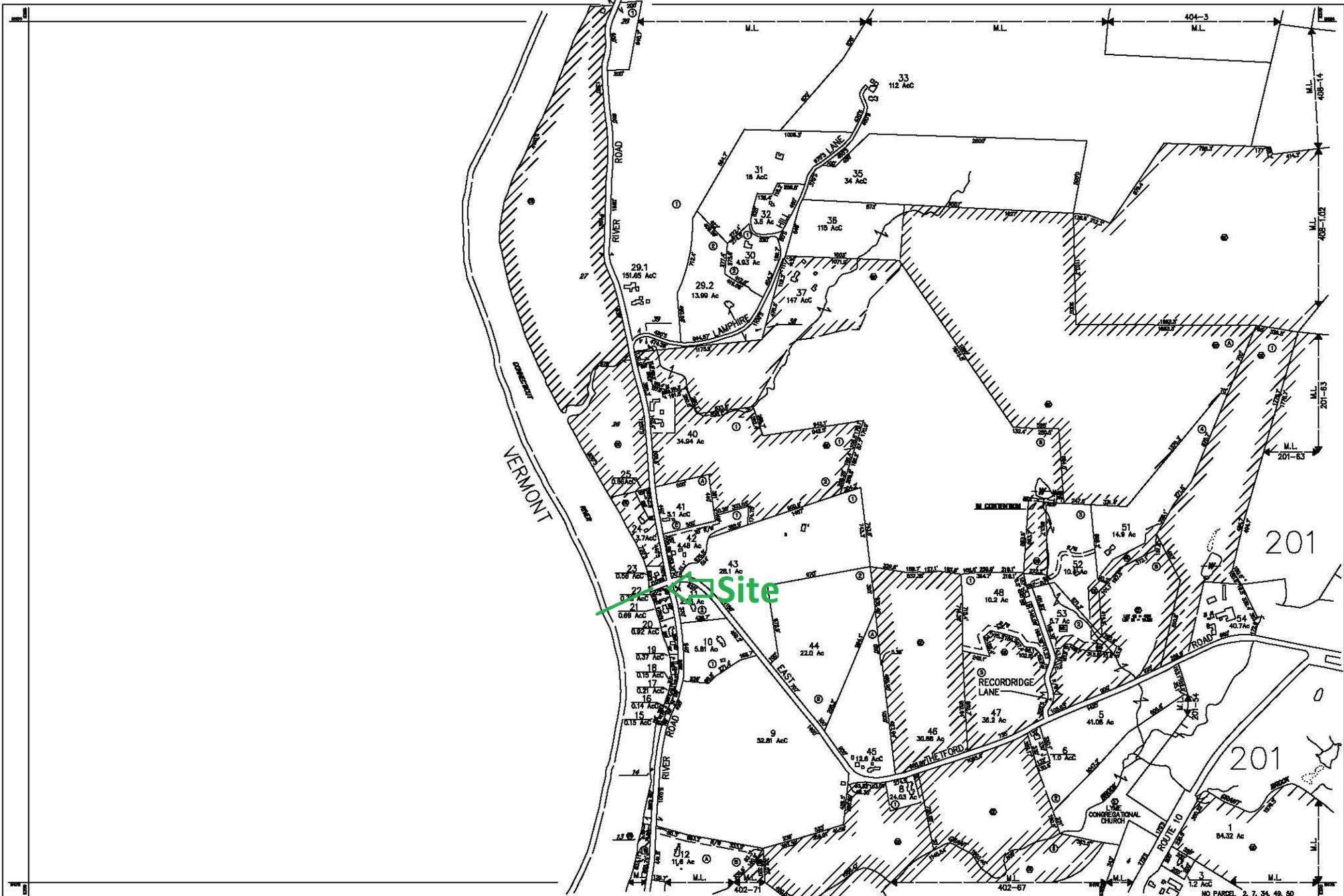
Attachment E – Table 1. Shoreland Assessment Vegetation Data

Table 1: Shoreland Assessment Vegetation Data

Plant ID	Plant Species	Diameter at Breast Height (DBH, inches)	NHDES Score	Notes
P001	Green ash (<i>Fraxinus pennsylvanica</i>)	1.4	1	stem from trunk with multiple stems
P002	Green ash (<i>Fraxinus pennsylvanica</i>)	1.2	1	stem from trunk with multiple stems
P003	Box-elder, Ash-leaf maple (<i>Acer negundo</i>)	15.5	15	tree lying down horizontally along bank
P004	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.9	1	stem from trunk with multiple stems
P005	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.2	1	stem from trunk with multiple stems
P006	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2	1	stem from trunk with multiple stems
P007	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.9	1	stem from trunk with multiple stems
P008	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.3	1	stem from trunk with multiple stems
P009	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.5	1	stem from trunk with multiple stems
P010	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.3	1	stem from trunk with multiple stems
P011	Black cherry (<i>Prunus serotina</i>)	4.4	5	stem from trunk with multiple stems
P012	Black cherry (<i>Prunus serotina</i>)	2	1	stem from trunk with multiple stems
P013	Black cherry (<i>Prunus serotina</i>)	2.5	1	stem from trunk with multiple stems
P014	Green ash (<i>Fraxinus pennsylvanica</i>)	6.55	10	stem from trunk with multiple stems
P015	Green ash (<i>Fraxinus pennsylvanica</i>)	4.85	5	stem from trunk with multiple stems
P016	Green ash (<i>Fraxinus pennsylvanica</i>)	5.2	5	stem from trunk with multiple stems
P017	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P018	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P019	Staghorn sumac (<i>Rhus hirta</i>)	1.4	1	single stem
P020	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.4	1	stem from trunk with multiple stems
P021	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.5	1	stem from trunk with multiple stems
P022	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.6	1	stem from trunk with multiple stems
P023	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.4	1	stem from trunk with multiple stems
P024	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.7	1	stem from trunk with multiple stems
P025	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.5	1	stem from trunk with multiple stems
P026	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.7	1	stem from trunk with multiple stems
P027	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.6	1	stem from trunk with multiple stems
P028	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.5	1	stem from trunk with multiple stems
P029	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.5	1	stem from trunk with multiple stems
P030	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P031	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P032	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P033	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P034	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P035	Staghorn sumac (<i>Rhus hirta</i>)	1.7	1	single stem
P036	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P037	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.1	1	stem from trunk with multiple stems
P038	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P039	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2	1	stem from trunk with multiple stems
P040	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.7	1	stem from trunk with multiple stems
P041	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.5	1	stem from trunk with multiple stems
P042	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.4	1	stem from trunk with multiple stems
P043	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P044	American basswood (<i>Tilia americana</i>)	6.45	10	stem from trunk with multiple stems
P045	American basswood (<i>Tilia americana</i>)	11.25	10	stem from trunk with multiple stems
P046	American basswood (<i>Tilia americana</i>)	3	5	stem from trunk with multiple stems
P047	American basswood (<i>Tilia americana</i>)	4.5	5	stem from trunk with multiple stems
P048	*Glossy false buckthorn (<i>Frangula alnus</i>)	1	1	single stem
P049	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P050	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.3	1	stem from trunk with multiple stems
P051	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P052	American elm (<i>Ulmus americana</i>)	1.6	1	single stem
P053	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P054	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P055	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P056	Speckled alder (<i>Alnus incana</i>)	1.85	1	single stem
P057	Speckled alder (<i>Alnus incana</i>)	1.85	1	single stem
P058	Speckled alder (<i>Alnus incana</i>)	2.5	1	single stem
P059	Speckled alder (<i>Alnus incana</i>)	2.2	1	single stem
P060	Speckled alder (<i>Alnus incana</i>)	2.8	1	single stem
P061	Speckled alder (<i>Alnus incana</i>)	1.7	1	single stem
P062	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P063	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P064	Staghorn sumac (<i>Rhus hirta</i>)	1.1	1	single stem
P065	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P066	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.4	1	stem from trunk with multiple stems
P067	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2	1	stem from trunk with multiple stems
P068	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P069	Staghorn sumac (<i>Rhus hirta</i>)	1.1	1	single stem
P070	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P071	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P072	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P073	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P074	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P075	Staghorn sumac (<i>Rhus hirta</i>)	1.1	1	single stem
P076	Green ash (<i>Fraxinus pennsylvanica</i>)	1.3	1	stem from trunk with multiple stems
P077	Green ash (<i>Fraxinus pennsylvanica</i>)	2.3	1	stem from trunk with multiple stems

Plant ID	Plant Species	Diameter at Breast Height (DBH, inches)	NHDES Score	Notes
P078	Green ash (<i>Fraxinus pennsylvanica</i>)	2.7	1	stem from trunk with multiple stems
P079	Staghorn sumac (<i>Rhus hirta</i>)	1.6	1	single stem
P080	Staghorn sumac (<i>Rhus hirta</i>)	1.6	1	single stem
P081	*Glossy false buckthorn (<i>Frangula alnus</i>)	1	1	single stem
P082	*Glossy false buckthorn (<i>Frangula alnus</i>)	1	1	single stem
P083	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P084	Staghorn sumac (<i>Rhus hirta</i>)	1.7	1	single stem
P085	Staghorn sumac (<i>Rhus hirta</i>)	1.55	1	single stem
P086	Staghorn sumac (<i>Rhus hirta</i>)	1.5	1	single stem
P087	Staghorn sumac (<i>Rhus hirta</i>)	1.8	1	single stem
P088	Staghorn sumac (<i>Rhus hirta</i>)	1.4	1	single stem
P089	Staghorn sumac (<i>Rhus hirta</i>)	1.6	1	single stem
P090	Staghorn sumac (<i>Rhus hirta</i>)	1.4	1	single stem
P091	Staghorn sumac (<i>Rhus hirta</i>)	1.1	1	single stem
P092	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P093	Staghorn sumac (<i>Rhus hirta</i>)	2	1	single stem
P094	Staghorn sumac (<i>Rhus hirta</i>)	1.8	1	single stem
P095	Staghorn sumac (<i>Rhus hirta</i>)	1.5	1	single stem
P096	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P097	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P098	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.1	1	stem from trunk with multiple stems
P099	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P100	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P101	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.8	1	stem from trunk with multiple stems
P102	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P103	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P104	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.1	1	stem from trunk with multiple stems
P105	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.6	1	stem from trunk with multiple stems
P106	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2.4	1	stem from trunk with multiple stems
P107	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	2	1	stem from trunk with multiple stems
P108	Staghorn sumac (<i>Rhus hirta</i>)	1.8	1	single stem
P109	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P110	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P111	Staghorn sumac (<i>Rhus hirta</i>)	1.6	1	single stem
P112	Staghorn sumac (<i>Rhus hirta</i>)	1.4	1	single stem
P113	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P114	Staghorn sumac (<i>Rhus hirta</i>)	1.7	1	single stem
P115	Staghorn sumac (<i>Rhus hirta</i>)	1.6	1	single stem
P116	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P117	Staghorn sumac (<i>Rhus hirta</i>)	1.1	1	single stem
P118	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P119	Staghorn sumac (<i>Rhus hirta</i>)	1	1	single stem
P120	Staghorn sumac (<i>Rhus hirta</i>)	1.1	1	single stem
P121	Staghorn sumac (<i>Rhus hirta</i>)	2	1	single stem
P122	Staghorn sumac (<i>Rhus hirta</i>)	3.5	5	single stem
P123	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P124	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1	1	stem from trunk with multiple stems
P125	Green ash (<i>Fraxinus pennsylvanica</i>)	9.5	10	single stem
P126	Staghorn sumac (<i>Rhus hirta</i>)	1.2	1	single stem
P127	*Morrow's honeysuckle (<i>Lonicera morrowii</i>)	1.2	1	stem from trunk with multiple stems
P128	Staghorn sumac (<i>Rhus hirta</i>)	1.5	1	single stem
P129	Staghorn sumac (<i>Rhus hirta</i>)	2	1	single stem
P130	Box-elder, Ash-leaf maple (<i>Acer negundo</i>)	6.4	10	single stem
P131	Box-elder, Ash-leaf maple (<i>Acer negundo</i>)	10.4	10	single stem
P132	Black locust (<i>Robinia pseudoacacia</i>)	3.7	5	single stem
P133	Black locust (<i>Robinia pseudoacacia</i>)	1.8	1	single stem
P134	American elm (<i>Ulmus americana</i>)	4.5	5	single stem
P135	Staghorn sumac (<i>Rhus hirta</i>)	4.1	5	single stem
P136	Red maple (<i>Acer rubrum</i>)	5.5	5	stem from trunk with multiple stems
P137	Red maple (<i>Acer rubrum</i>)	7.6	10	stem from trunk with multiple stems
P138	Red maple (<i>Acer rubrum</i>)	5.4	5	stem from trunk with multiple stems

*Non-native invasive species



THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT VALID FOR LEGAL DESCRIPTION OR CONVEYANCE.

THE HORIZONTAL DATUM IS THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM.

PHOTOGRAPHY DATE : November 27, 1988

COMPLETION DATE : November 19, 1990

PRODUCED BY
CARTOGRAPHIC ASSOCIATES, INC.

MUNICIPAL MAPPING CONSULTANTS
 11 PLEASANT STREET, LITTLETON, NH 03561

LEGEND

AREA CALCULATED Ac
 AREA SURVEYED Ac

COMMON OWNERSHIP

EXEMPT PROPERTY

EXCLUSIVE USE EASEMENT

RIGHT OF WAY

CONSERVATION EASEMENT

RECORD DIMENSION 100'S
 SCALED DIMENSION SUBDIVISION LOT NO.
 LOT/DIVISION 14106
 WATER/WETLANDS
 MATCH LINE
 AGRICULTURAL PRESERVATION RESTRICTION

SCALE 1" = 400'

FEET 0 400 800 1200

METERS 0 121.92 243.84 365.76

REVISED TO :

PROPERTY MAPS

LYME

NEW HAMPSHIRE

INDEX DIAGRAM

MAP NO. **403**

NO PARCEL 2, 7, 34, 49, 50

**Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation Amended Wetland Permit
Abutter List - Exhibit U**

Tax Map 403 Lot 22 and 21

RAYMOND A. ZACK TRUST
MICHAEL A. ZACK & HENRY LESTER TRUSTEES
PO BOX 159
THETFORD, VT 05074



8 5 2 9 1 5 6
Tx:4468225

21008869 05/27/2021 10:06 AM
Book 4634 Page 834 Page 1 of 2
Register of Deeds, Grafton County

Keely Monahan

EXHIBIT V

TEMPORARY CONSTRUCTION EASEMENT

187
KNOW ALL MEN BY THESE PRESENTS THAT, We, Michael A. Zack of 319 River Road, Lyme, NH, 03768, and Henry Lester, with a mailing address c/o Paragon Capital Management, 999 18th Street, Suite 1220, Denver, CO, 80202, Co-Trustees of the Raymond A. Zack Trust FBO Michael A. Zack, for good and valuable consideration, grant to the State of New Hampshire, whose address is PO Box 483, 7 Hazen Drive, Concord, New Hampshire 03302-0483, the following described property right on land of the Grantor, not homestead, located in the Town of Lyme, County of Grafton, State of New Hampshire and shown on a Plan of Lyme, NH – Thetford, VT, A000(394), 14460, on file in the records of the New Hampshire Department of Transportation:

Granting the temporary right and easement for the purpose of constructing temporary access to and from the NH DOT Bridge No. 053/152 on land of the Grantor as shown on the above-referenced Plan in accordance with the standard practice of highway and bridge construction. No excavation of the original surface is permitted. Said temporary construction easement area shall be affected for a period of thirty-six (36) months during the construction of the project. Upon completion of the work, the area shall be restored as near as possible to its original condition. The property owner shall have unencumbered use of the area at all other times. Said easement shall expire on October 4, 2031, or one (1) year after completion of the construction for the project, whichever date shall come first.

Being an interest in that property recorded August 29, 2012, at the Grafton County Registry of Deeds in Book 3910, Page 0934.

Executed this 21ST day of APRIL, 2021.

RAYMOND A. ZACK TRUST FBO MICHAEL A. ZACK

Michael Zack

Michael A. Zack, Trustee

STATE OF New Hampshire
COUNTY OF Grafton

This instrument was acknowledged before me on the 21st day of April, 2021 by Michael A. Zack, who acknowledged himself as being a Trustee of the Raymond A. Zack Trust FBO Michael A. Zack, and that as such Trustee, being authorized so to do, executed the foregoing instrument for the purposes therein contained.

IN WITNESS WHEREOF I have hereunto set my hand and seal.

NANCY L. WELSH, Notary Public
State of New Hampshire
My Commission Expires July 27, 2023

Nancy Welsh

Notary Public/Justice of the Peace
My commission expires: 7/27/23

Executed this 29th day of April, 2021.

RAYMOND A. ZACK TRUST FBO MICHAEL A. ZACK

Henry Lester
Henry Lester, Trustee

STATE OF Colorado
COUNTY OF Denver

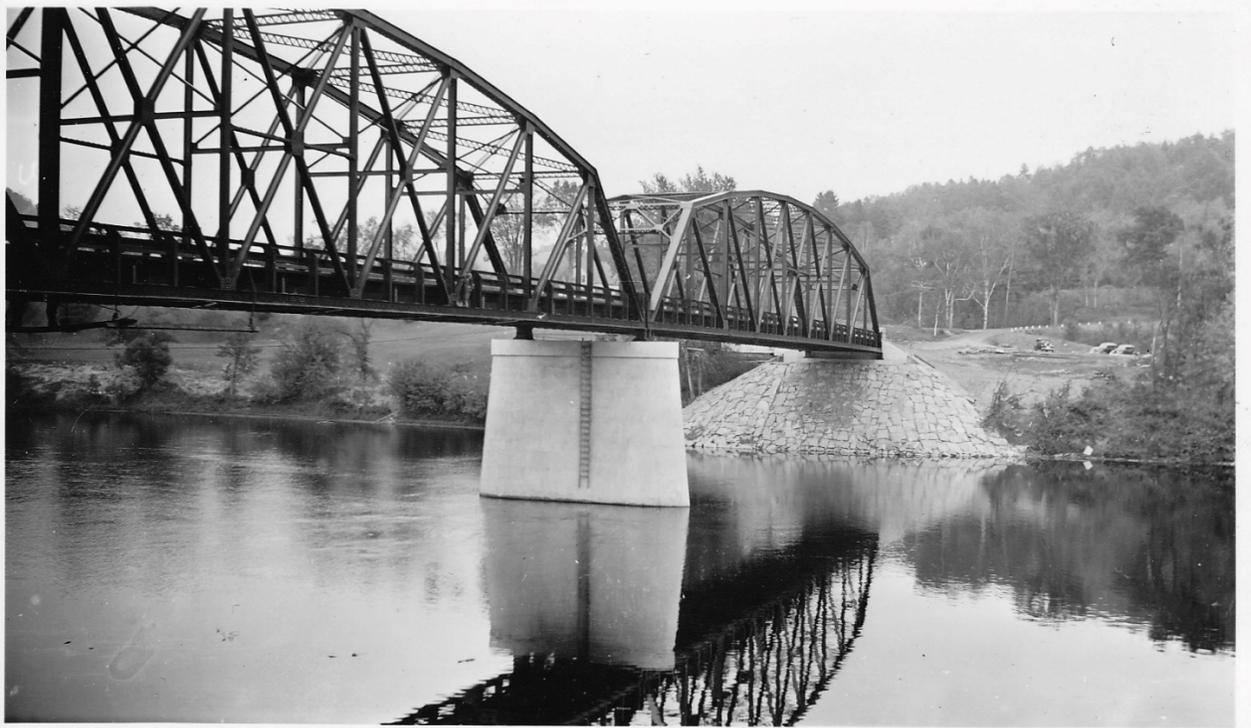
This instrument was acknowledged before me on the 29th day of April, 2021 by Henry Lester, who acknowledged himself as being a Trustee of the Raymond A. Zack Trust FBO Michael A. Zack, and that as such Trustee, being authorized so to do, executed the foregoing instrument for the purposes therein contained.

IN WITNESS WHEREOF I have hereunto set my hand and seal.

KRISTINA AVERY-NELSON
Notary Public
STATE OF COLORADO
Notary ID 20094038900
My Commission Expires August 18, 2022

Kristina Avery Nelson
Notary Public/Justice of the Peace
My commission expires: Aug 18, 2022

Exhibit W
Lyme, NH – Thetford, VT 14460 - Bridge Rehabilitation
Amended Wetlands Permit Application



View easterly from Vermont of pier and NH bridge abutment circa 1937



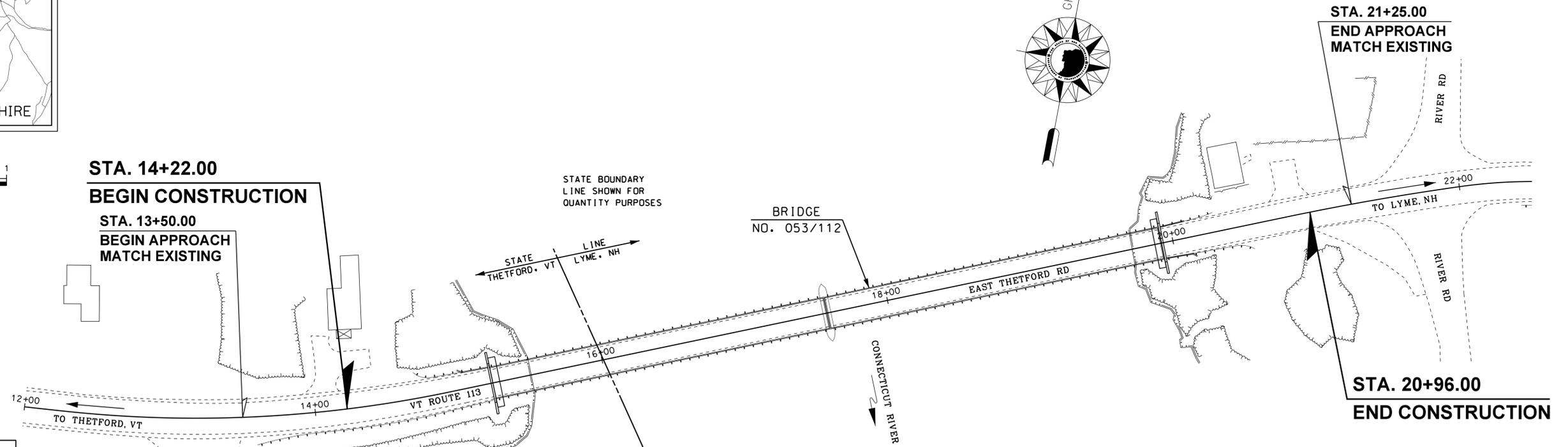
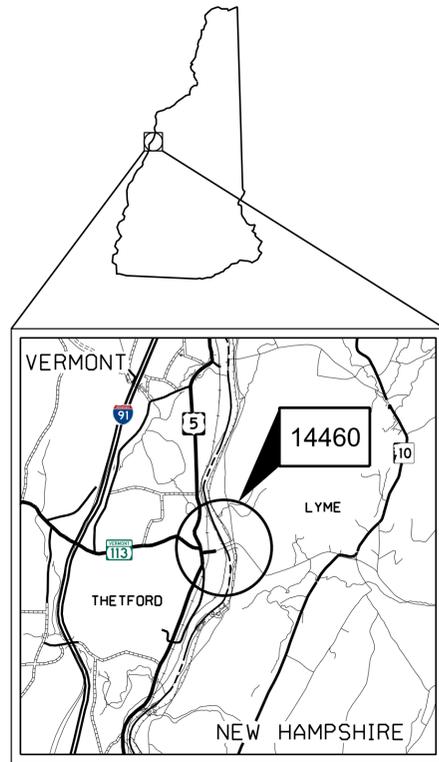
View westerly towards Vermont of completed bridge. Historic Toll House at right of photo - circa 1937

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
**AMENDED WETLAND PLANS
FEDERAL AID PROJECT**

A000(394)

NH PROJECT NO. 14460
VT ROUTE 113 & EAST THETFORD ROAD OVER
THE CONNECTICUT RIVER

DESIGN DATA	
AVERAGE DAILY TRAFFIC 2016	2,200
AVERAGE DAILY TRAFFIC 2036	2,700
PERCENT OF TRUCKS	9.5%
DESIGN SPEED	25 MPH
LENGTH OF ROADWAY	775 FT



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	TITLE PAGE
2-3	STANDARD SYMBOLS
4	SITE PLAN & PROFILE
5	SURVEY LAYOUT & APPROACH SECTION
6	EROSION CONTROL STRATEGIES
7	WETLAND IMPACT PLAN
8-9	EROSION CONTROL PLANS
10	ACCESS DRIVE PLAN & PROFILE
11	ABUTMENT RECONSTRUCTION PLAN
12	1937 RIPRAP DETAIL SHEET

LYME, NH - THETFORD, VT
COUNTIES OF GRAFTON, NH - ORANGE, VT

SCALE: 1" = 40'

DRAWN BY TJC
CHECKED BY DEM
DATE 06/2021
DATE 06/2021

PLANS PREPARED BY:

STANTEC CONSULTING SERVICES, INC
5 DARTMOUTH DR, SUITE 200, AUBURN, NH 03032
TEL (603) 669-8672 FAX (603) 669-7636

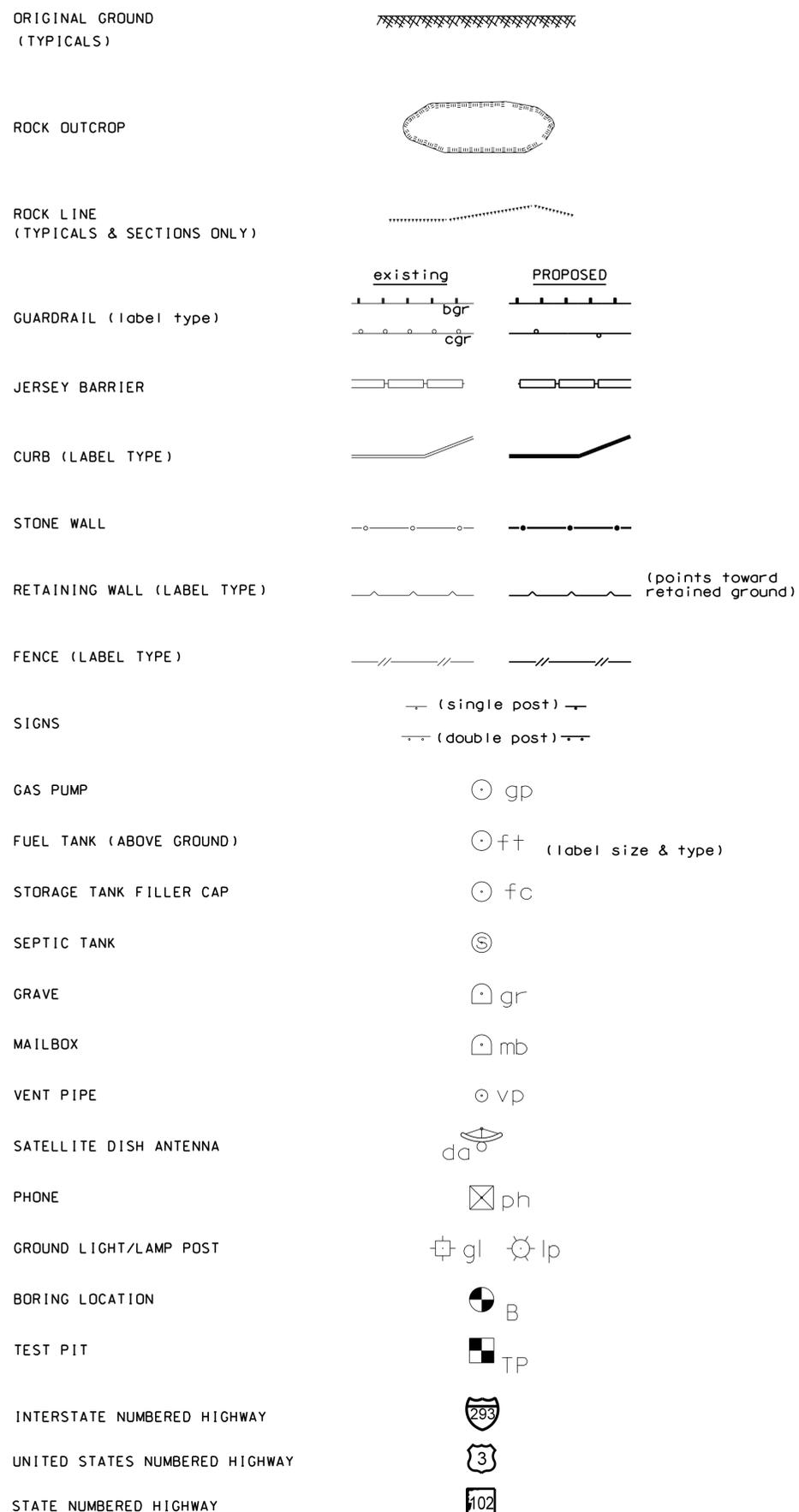
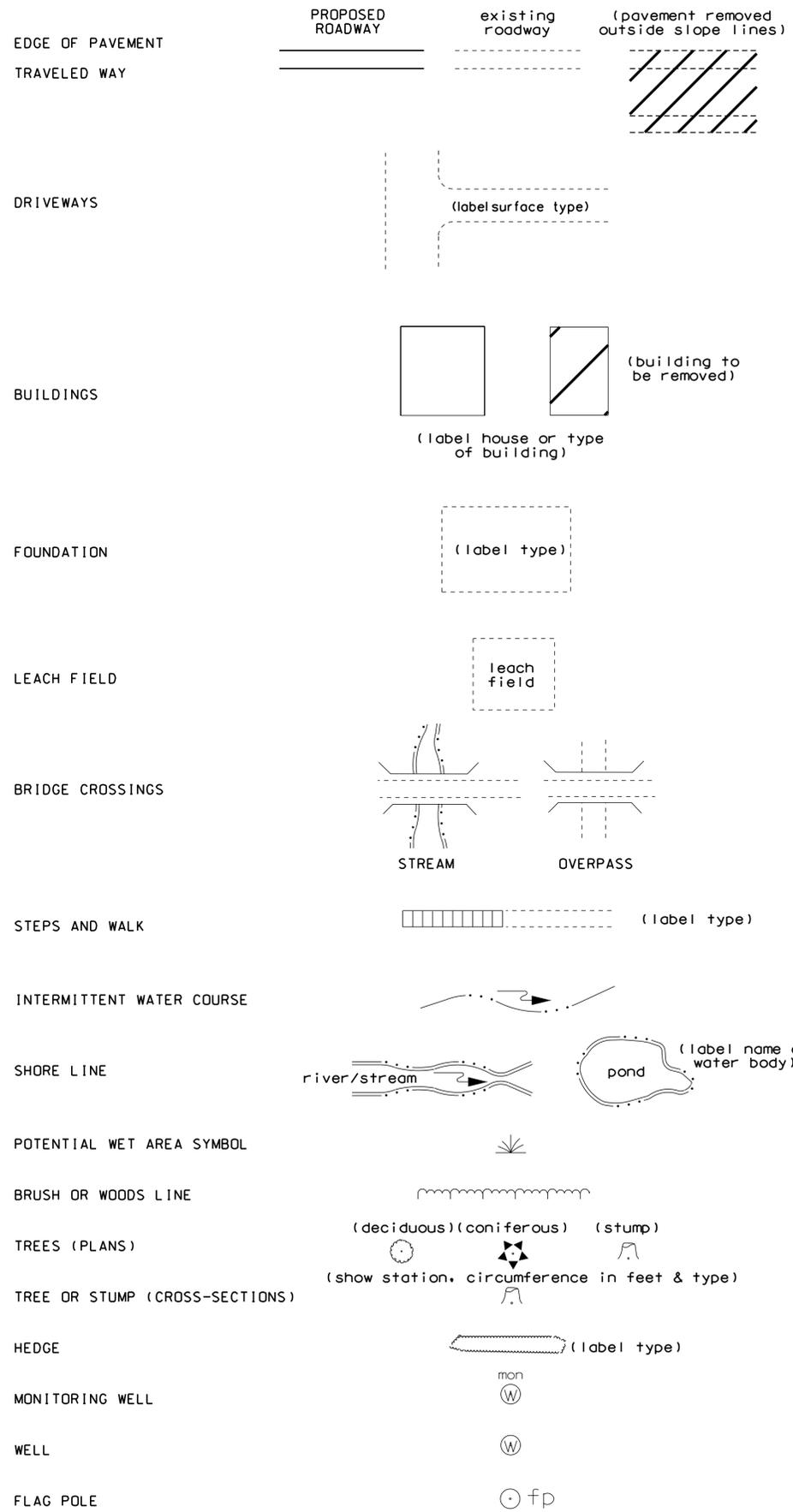
STAMP:

WETLANDS WERE DELINEATED BY STANTEC, INC. IN 2013 REFRESHED IN 2018 AND 2021. THE WETLAND DELINEATIONS WERE COMPLETED IN ACCORDANCE WITH THE CRITERIA DESCRIBED IN THE U.S. ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL TECHNICAL REPORT Y-87-1 (JANUARY, 1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL FOR THE NORTHCENTRAL NORTHEAST REGION (VERSION 2.0, JANUARY, 2012) AND MEET THE CRITERIA FOR WETLAND DELINEATION IN ACCORDANCE WITH THE NH DES ADMINISTRATIVE RULES ENV-WT 301.01 AND ENV-WT 101.48.

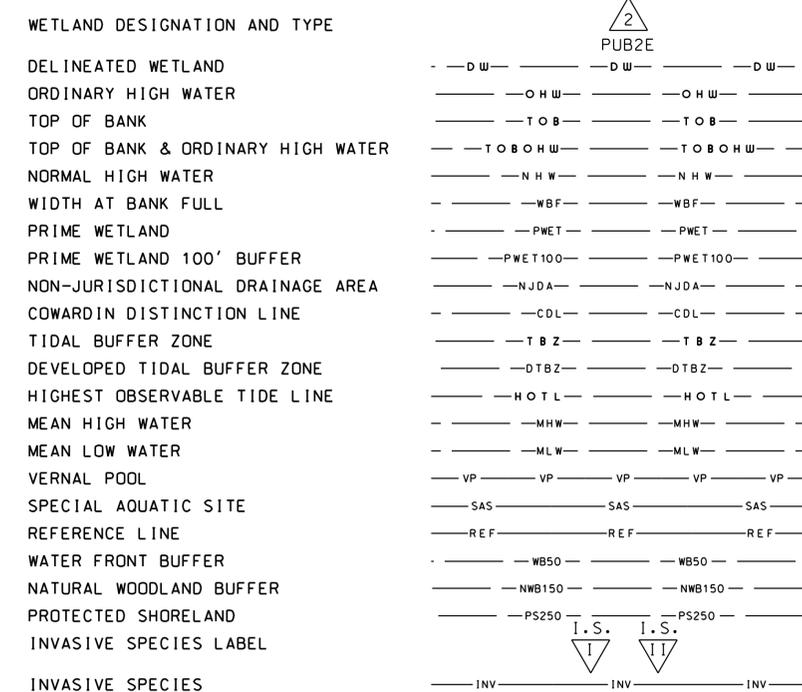


NH DOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION			
RECOMMENDED FOR APPROVAL:			
_____ DIRECTOR OF PROJECT DEVELOPMENT		_____ DATE	
APPROVED:			
_____ ASSISTANT COMMISSIONER AND CHIEF ENGINEER		_____ DATE	
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
A000(394)	14460	1	12

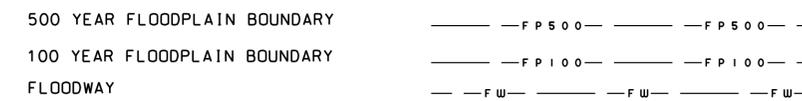
GENERAL



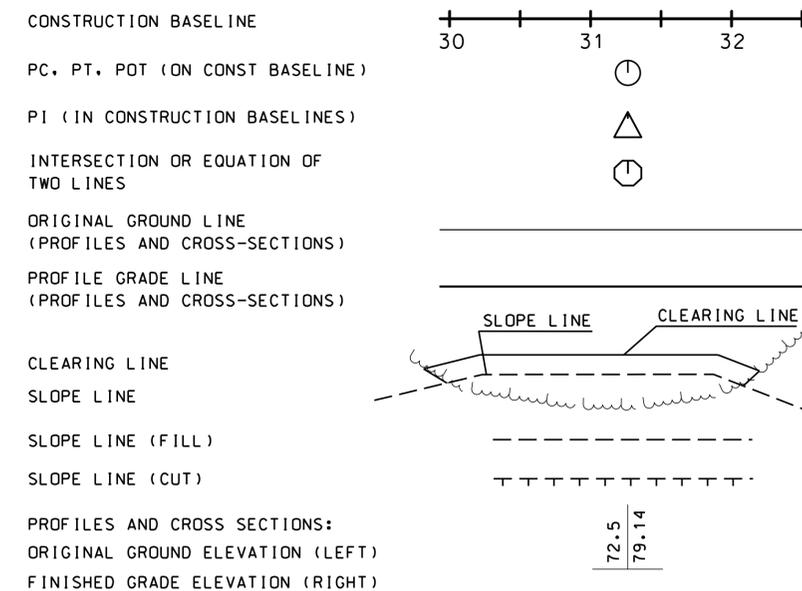
SHORELAND - WETLAND



FLOODPLAIN / FLOODWAY



ENGINEERING

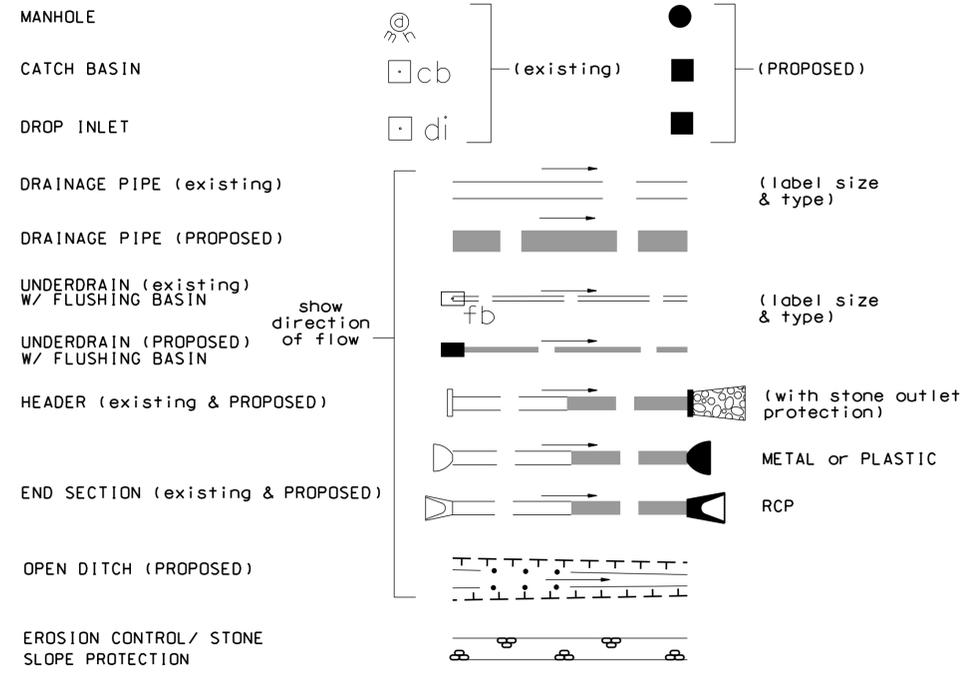


SHEET 1 OF 2

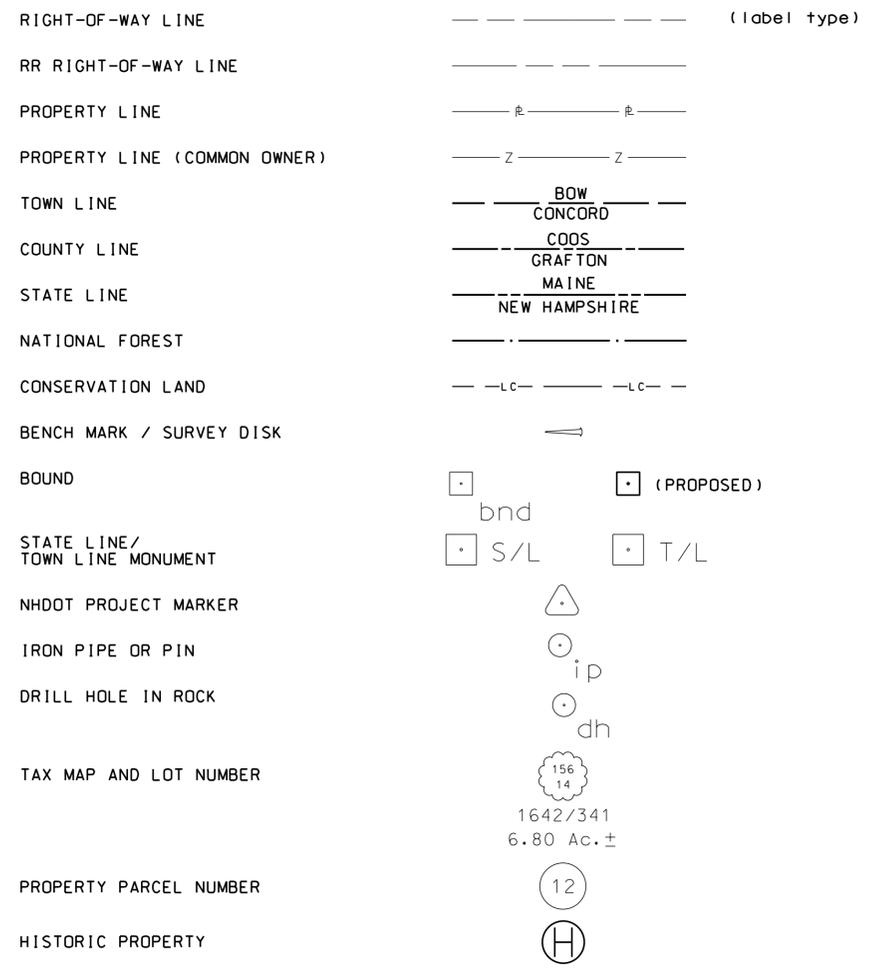
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN
STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	14460SYM01	14460	2	12

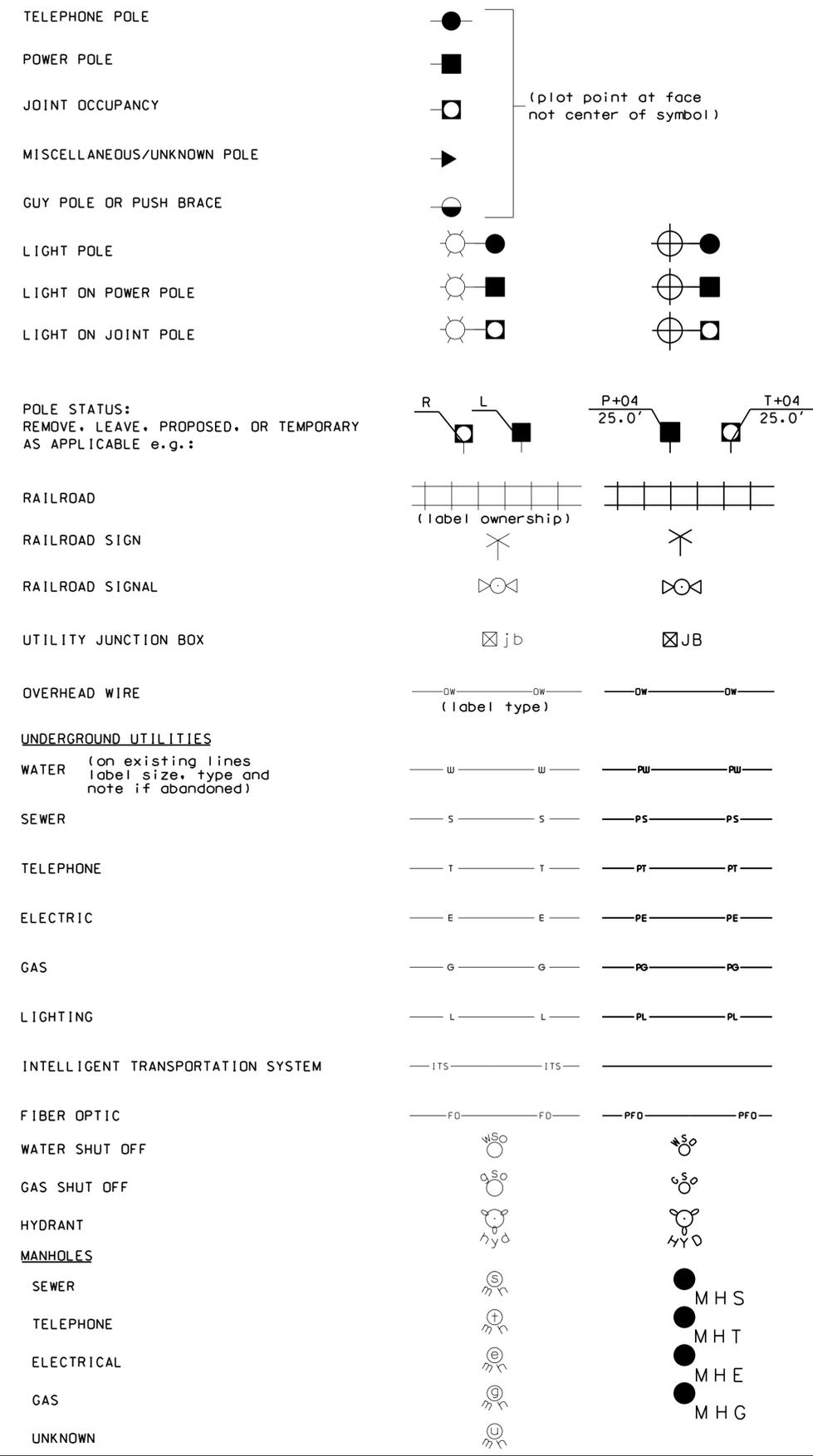
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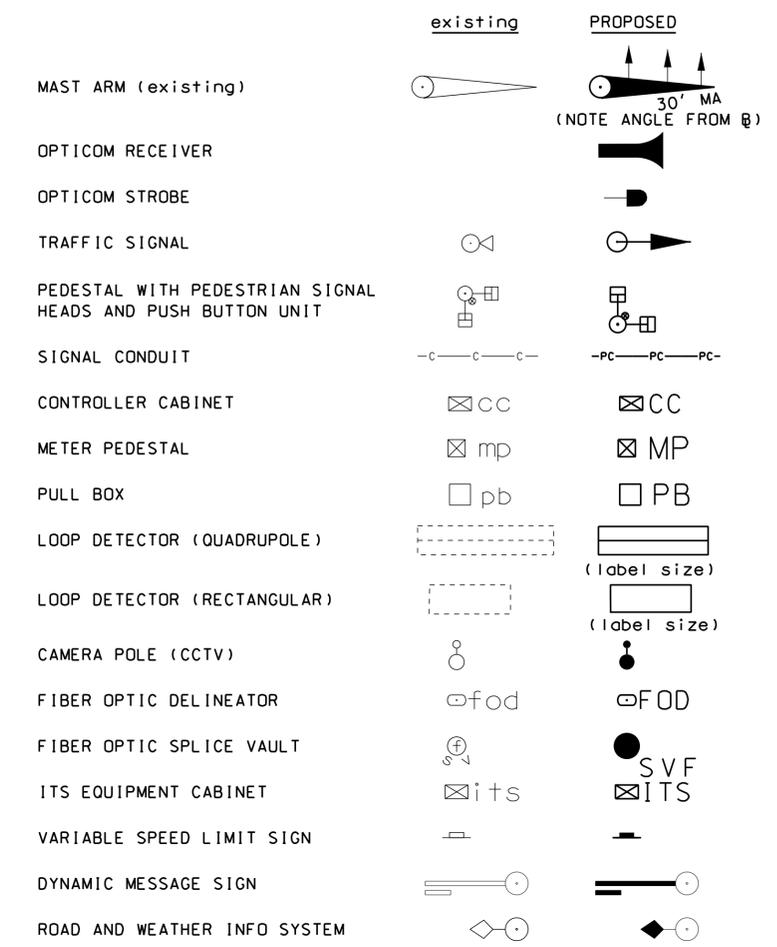
BOUNDARIES / RIGHT-OF-WAY



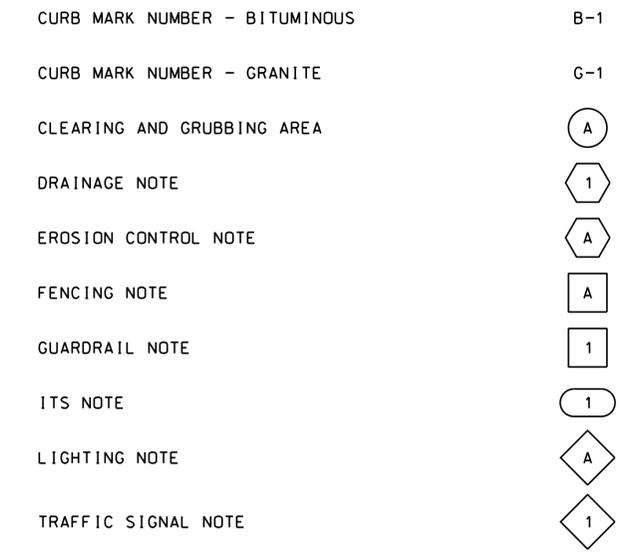
UTILITIES



TRAFFIC SIGNALS / ITS



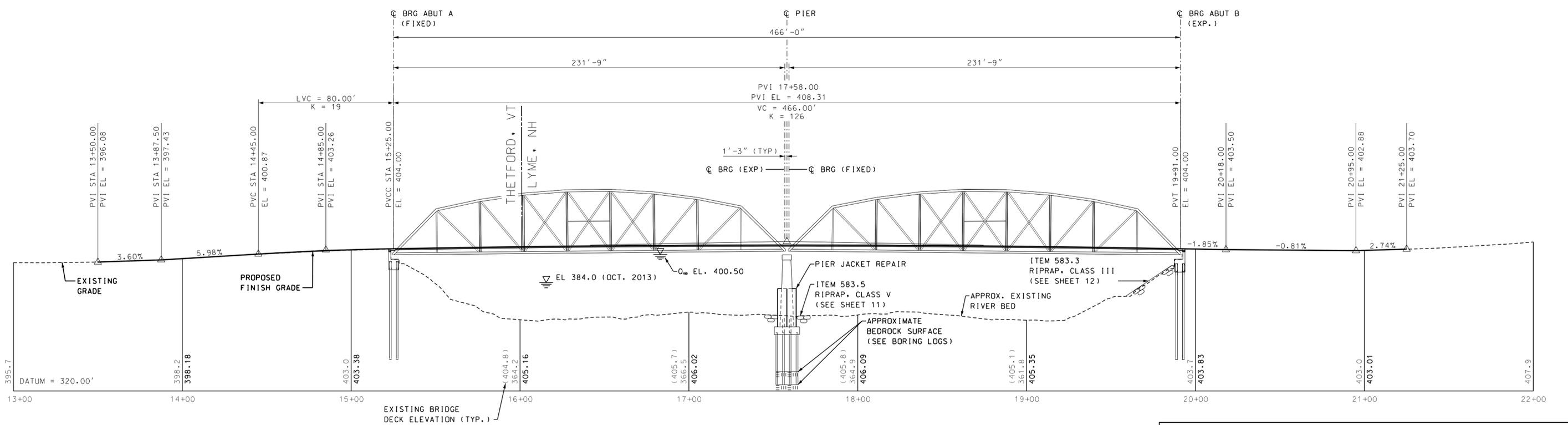
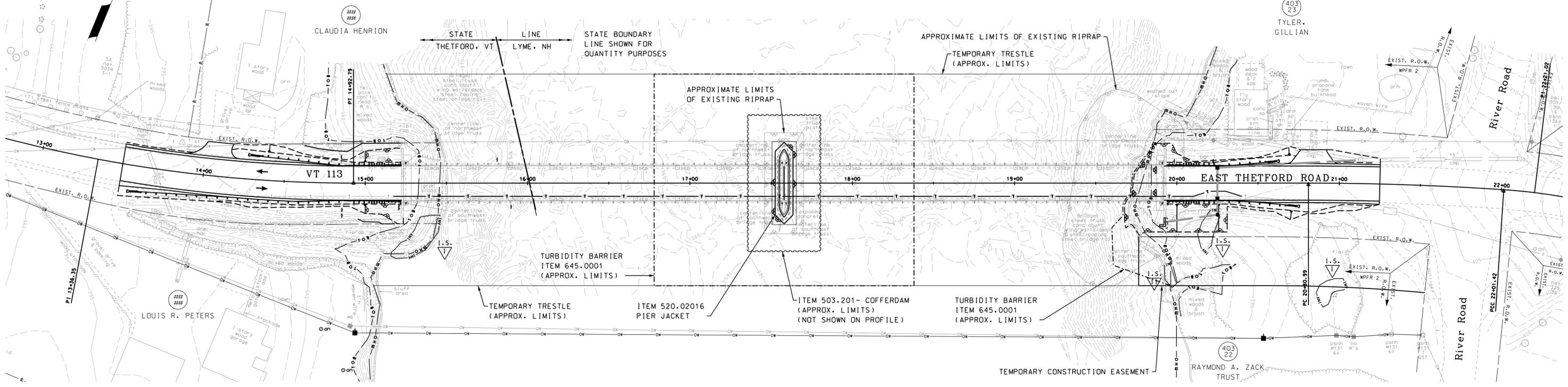
CONSTRUCTION NOTES



STATE OF NEW HAMPSHIRE				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
STANDARD SYMBOLS				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	14460SYM02	14460	3	12



EAST THETFORD RD - CURVE 1 PI Sta. 11+50.62 N = 478487.73 E = 847354.94 Δ = 2°37'58.20" R = 3500.00' T = 80.43' L = 160.83'	EAST THETFORD RD - CURVE 2 PI Sta. 13+62.95 N = 478505.69 E = 847566.54 Δ = 17°38'40.99" R = 850.00' T = 131.93' L = 261.76'	EAST THETFORD RD - CURVE 3 PI Sta. 21+41.23 N = 478804.29 E = 848287.51 Δ = 3°50'00.68" R = 1800.00' T = 60.24' L = 120.43'	EAST THETFORD RD - CURVE 4 PI Sta. 22+42.96 N = 478836.86 E = 848383.94 Δ = 13°32'07.21" R = 350.00' T = 41.53' L = 82.68'
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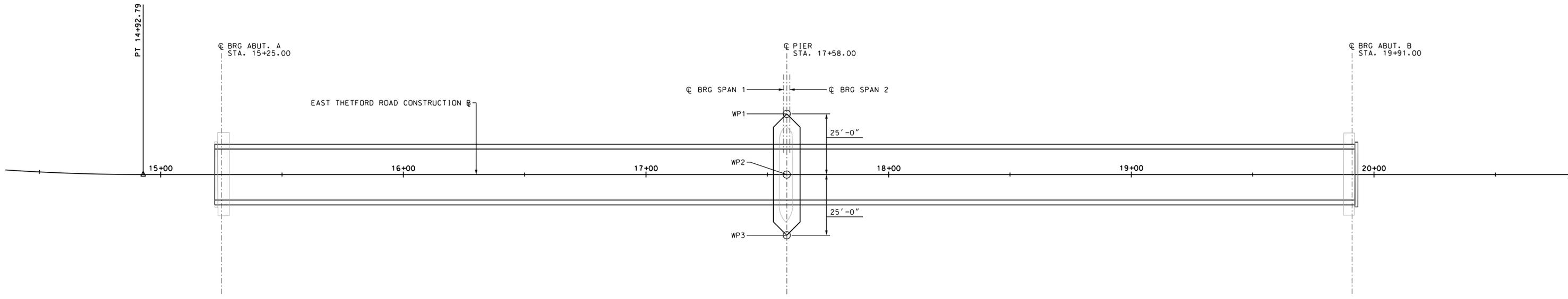
STATE OF NEW HAMPSHIRE					
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN					
TOWN	LYME AND THETFORD	BRIDGE NO.	053/112	STATE PROJECT	14460
LOCATION	VT ROUTE 113 & EAST THETFORD ROAD OVER THE CONNECTICUT RIVER				
SITE PLAN & PROFILE					BRIDGE SHEET - OF 38
DESIGNED	JDG	01/2019	CHECKED	JGS	03/2019
DRAWN	LRB	02/2019	CHECKED	JGS	03/2019
QUANTITIES	JRG	03/2019	CHECKED	TEK	03/2019
ISSUE DATE	FEDERAL PROJECT NO.			SHEET NO.	TOTAL SHEETS
REV. DATE	A000(394)			4	12



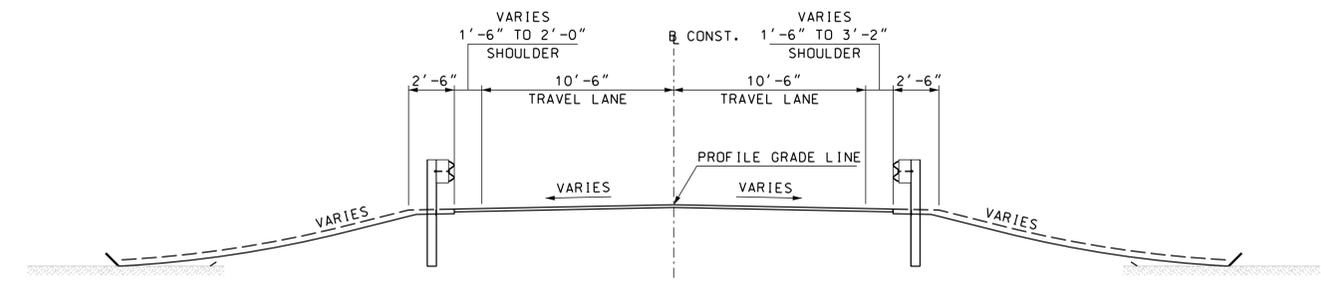
SUBDIRECTORY	DGN LOCATOR	SHEET SCALE
XX	14460SITE	AS NOTED



WORKING POINT COORDINATES		
WORKING POINT	NORTHING	EASTING
WP1	478676.9977	847925.4389
WP2	478657.6527	847933.4509
WP3	478634.5553	847943.0169



SURVEY LAYOUT
SCALE: 1" = 20'



TYPICAL APPROACH SECTION
NOT TO SCALE

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN									
TOWN	LYME AND THETFORD	BRIDGE NO.	053/112	STATE PROJECT	14460				
LOCATION VT ROUTE 113 & EAST THETFORD ROAD OVER THE CONNECTICUT RIVER									
SURVEY LAYOUT AND APPROACH SECTION									
REVISIONS AFTER PROPOSAL		BY	DATE	CHECKED	BY	DATE	BRIDGE SHEET		
		JDG	01/2019	CHECKED	-	-	- OF 38		
		TJG	06/2021	CHECKED	-	-	FILE NUMBER		
		QUANTITIES		CHECKED	-	-	1-14-2-6		
		ISSUE DATE	FEDERAL PROJECT NO.		SHEET NO.		TOTAL SHEETS		
		REV. DATE	A000(394)		5		12		



SUBDIRECTORY	DGN LOCATOR	SHEET SCALE
XX	14460SVL	AS NOTED

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
 - 1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
 - 1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
 - 1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
 - 1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
 - 1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WO 1500 REQUIREMENTS ([HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM](http://des.nh.gov/organization/commissioner/legal/rules/index.htm))
 - 1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.
 2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
 - 2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
 - 2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
 - 2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
 - 2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
 - (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
 - (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
 - (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
 - (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
 - 2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
 - 2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
 - 2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
 - 2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30th AND MAY 1st OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
 - (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
 - (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
 - (C) AFTER NOVEMBER 30th INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
 - (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WO 1505.02 AND ENV-WO 1505.05.
 - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WO 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30th.
- GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS**
3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
 - 3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
 - 3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
 - 3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
 - 3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
 - 3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.
 4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
 - 4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
 - 4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
 - 4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1st THROUGH NOVEMBER 30th, OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.
 5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
 - 5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
 - 5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
 - 5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
 - 5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
 - 5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.
 6. PROTECT SLOPES:
 - 6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
 - 6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
 - 6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
 - 6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.
 7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
 - 7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
 - 7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.
 8. PROTECT STORM DRAIN INLETS:
 - 8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
 - 8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
 - 8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
 - 8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.
 9. SOIL STABILIZATION:
 - 9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
 - 9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
 - 9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR. IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
 - 9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.
 10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
 - 10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WO 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
 - 10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
 - 10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
 - 11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
 - 11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
 - 11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
 - 11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
 - 11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
 - 11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
 - 11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
 - 11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
 - 11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
 - 12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500; ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
 - 12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
 - 12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
 - 12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
 - 12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
 - 12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
 - 12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.
13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
 - 13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
 - 13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
 - 13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
 - 13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.
14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
 - 14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
 - 14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
 - 14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WO 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

**TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES**

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES ²				ROLLED EROSION CONTROL BLANKETS ³			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES ¹												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES	YES	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

- NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
 2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
 3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

STATE OF NEW HAMPSHIRE LYME AND THETFORD				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
<i>EROSION CONTROL STRATEGIES</i>				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	14460ECS	14460	6	12

SDR PROCESSED	DATE	DATE	DATE	DATE
NEW DESIGN	06/21	06/21	06/21	06/21
SHEET CHECKED	TJC	DEM		
AS BUILT DETAILS				

**STA. 14+22.00
BEGIN CONSTRUCTION**

**STA. 13+50.00
BEGIN APPROACH
MATCH EXISTING**

CONSTRUCTION SEQUENCE - STAGE 1

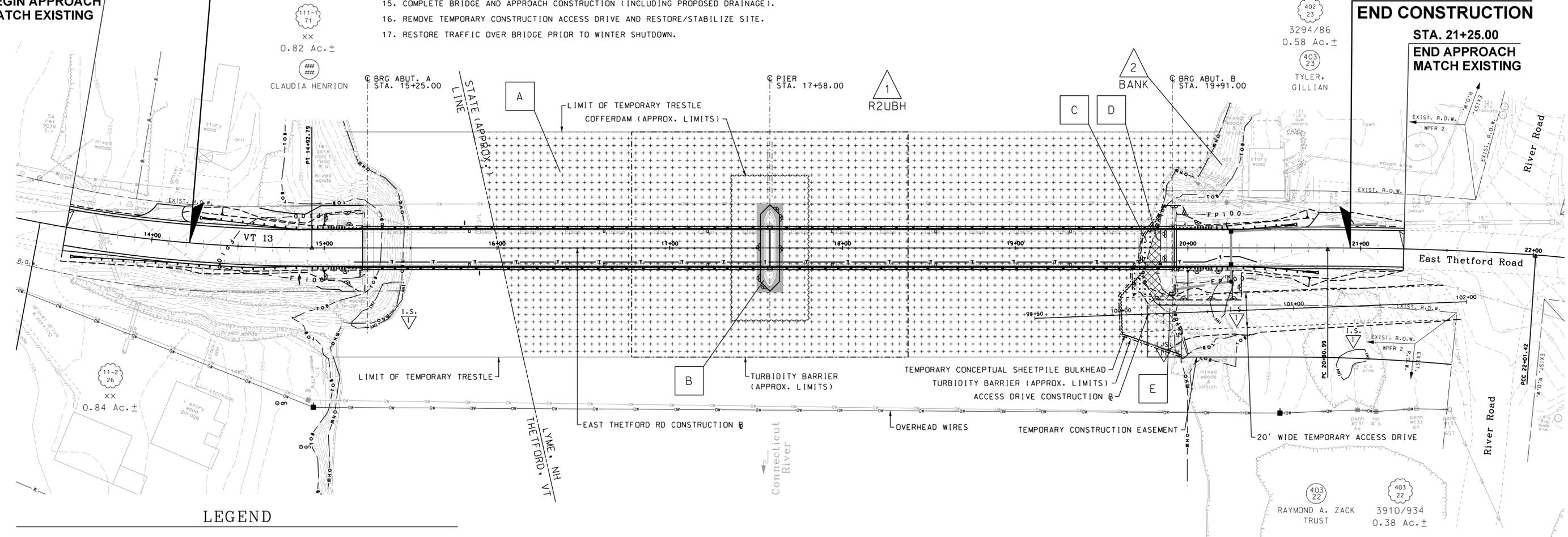
1. DETOUR TRAFFIC AND CLOSE BRIDGE.
2. BUILD ACCESS ROAD AND BULKHEAD AREA.
3. BEGIN TRESTLE CONSTRUCTION AND LAUNCH BARGE.
4. CONSTRUCT TEMPORARY TRUSS SUPPORT BENTS.
5. INSTALL COFFERDAM/TURBIDITY CURTAIN AROUND EXISTING PIER FROM BARGE OR TRESTLE.
6. REMOVE EXISTING BRIDGE DECK.
7. REPAIR EXISTING PIER.
8. REPLACE STRUCTURAL STEEL TRUSS MEMBERS.
9. CONSTRUCT PROPOSED BRIDGE DECK.
10. REMOVE COFFERDAM/TURBIDITY CURTAIN FROM BARGE OR TRESTLE AROUND PIER.
11. REMOVE PORTIONS OF TRESTLE AS REQUIRED.
12. REPAIR EXISTING ABUTMENTS AND REPAIR/RESTORE RIPRAP ALONG BANK.
13. COMPLETE BRIDGE DECK CONSTRUCTION.
14. REMOVE TRESTLE, REMOVE BARGE, AND REMOVE BULKHEAD.
15. COMPLETE BRIDGE AND APPROACH CONSTRUCTION (INCLUDING PROPOSED DRAINAGE).
16. REMOVE TEMPORARY CONSTRUCTION ACCESS DRIVE AND RESTORE/STABILIZE SITE.
17. RESTORE TRAFFIC OVER BRIDGE PRIOR TO WINTER SHUTDOWN.

CONSTRUCTION SEQUENCE - STAGE 2

1. DETOUR TRAFFIC AND CLOSE BRIDGE.
2. BRIDGE PAINTING OPERATIONS TO BE PERFORMED FROM BRIDGE SUPERSTRUCTURE.
3. RESTORE TRAFFIC OVER BRIDGE.

**STA. 20+96.00
END CONSTRUCTION**

**STA. 21+25.00
END APPROACH
MATCH EXISTING**



LEGEND

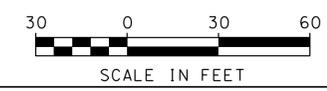
TYPE OF WETLAND IMPACT	SHADING/HATCHING	#	WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	[Diagonal Hatching]	#	WETLAND IMPACT LOCATION
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	[Solid Grey]	#	WETLAND MITIGATION AREA
TEMPORARY IMPACTS	[Cross-hatching]	[Diagonal Hatching]	MITIGATION
NEW HAMPSHIRE WETLANDS BUREAU (TEMPORARY NON-WETLAND) (1937 RIPRAP REPAIR)	[Cross-hatching]		
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (TEMPORARY IMPACT) (1937 RIPRAP REPAIR)	[Dotted]		

		WETLAND IMPACT SUMMARY						
		AREA						
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	PERMANENT IMPACTS				TEMPORARY IMPACTS	
			N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)	BANK	CHANNEL	AREA	LENGTH
			SF	SF	LF	LF	SF	LF
1	R2UBH	A					50,014	105
1	R2UBH	B		358		50		
1	R2UBH	C					262	70
2	BANK	D					324	61
2	BANK	E					125	33

NET PERMANENT (WETLAND) IMPACTS: 358 SF
 PERMANENT (NON-WETLAND) IMPACTS: 0 SF
 TEMPORARY IMPACTS: 50,725 SF
 TOTAL IMPACTS: 51,083 SF

WETLAND CLASSIFICATION CODES	
R2UBH	RIVERINE LOWER PERENNIAL UNCONSOLIDATED BOTTOM PERMANENTLY FLOODED
BANK	NH JURISDICTIONAL RIVERBANK

NOTE: CONTRACTOR SHALL MAINTAIN A NAVIGABLE CHANNEL DURING CONSTRUCTION



STATE OF NEW HAMPSHIRE LYME AND THETFORD			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
AMENDED WETLAND IMPACT PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14460WET01	14460	7	12



SDR PROCESSED	NHDDT	DATE	DATE	REVISIONS AFTER PROPOSAL	STATION
NEW DESIGN	TJC	06/21	06/21		
SHEET CHECKED	DEM	06/21			
AS BUILT DETAILS					

DAVID E. CHAPMAN

DAVID E. CHAPMAN

CLAUDIA HENRION

**STA. 14+22.00
BEGIN CONSTRUCTION**

**STA. 13+50.00
BEGIN APPROACH
MATCH EXISTING**

LOUIS R. PETERS

Q BRG ABUT. A
STA. 15+25.00

NOTE:
STATE BOUNDARY
LINE SHOWN FOR
QUANTITY PURPOSES
(STA. 16+01.00)

STATE LINE
THETFORD, VT LYME, NH

TEMPORARY TRESTLE

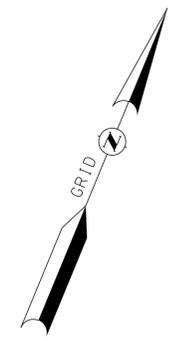
EAST THETFORD RD CONSTRUCTION

TEMPORARY TRESTLE

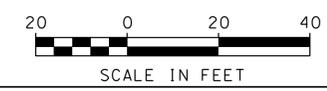
Connecticut River

TURBIDITY BARRIER
(APPROXIMATE LIMITS)

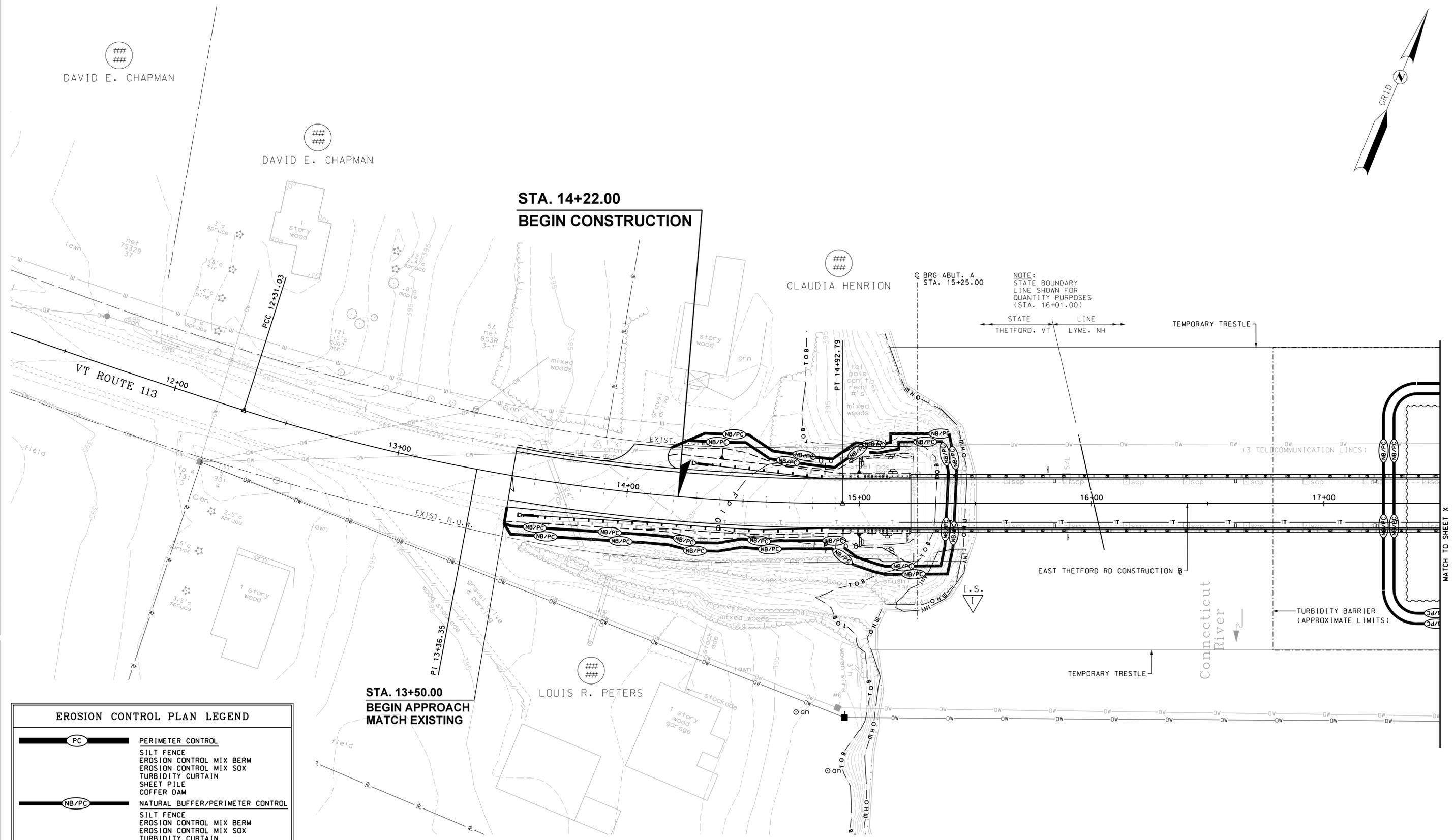
MATCH TO SHEET X



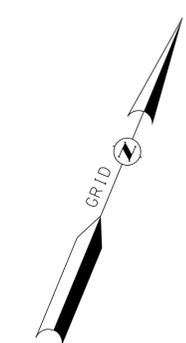
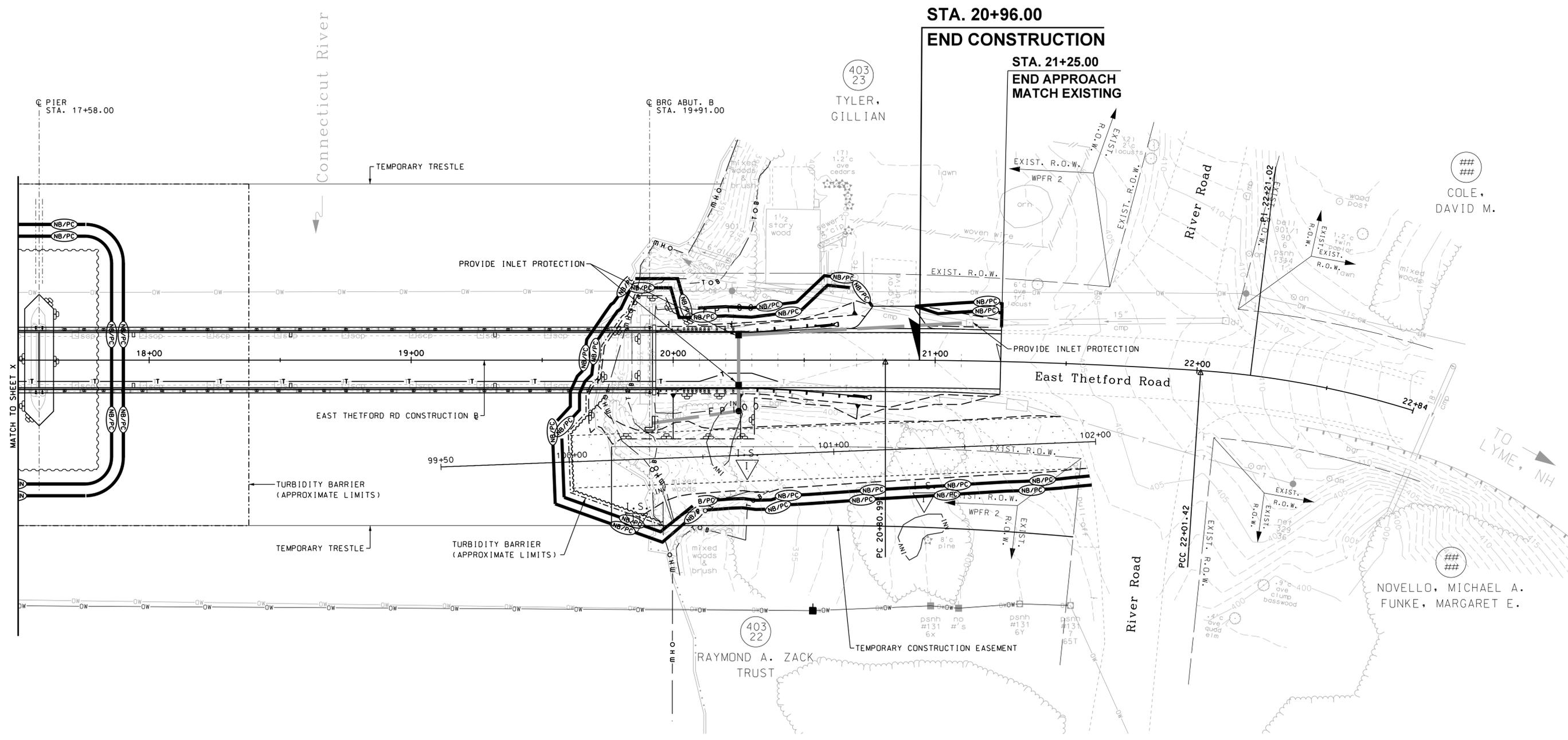
EROSION CONTROL PLAN LEGEND	
	PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
	NATURAL BUFFER/PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
	CHANNEL PROTECTION STONE CHECK DAMS STRAW WATTLES CHANNEL MATTING CLASS D EROSION STONE CLASS C STONE
	CLEAN WATER BYPASS PUMP THROUGH PIPE DRAIN THROUGH PIPE OR CHANNEL



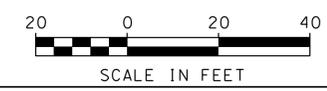
STATE OF NEW HAMPSHIRE LYME AND THETFORD			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
EROSION CONTROL PLAN (1 OF 2)			
DGN 14460EC01	STATE PROJECT NO. 14460	SHEET NO. 8	TOTAL SHEETS 12



SDR PROCESSED	NHDDT	DATE	REVISIONS AFTER PROPOSAL
NEW DESIGN	DEM	DATE 06/21	STATION
SHEET CHECKED	TJG	DATE 06/21	DESCRIPTION
AS BUILT DETAILS		DATE	

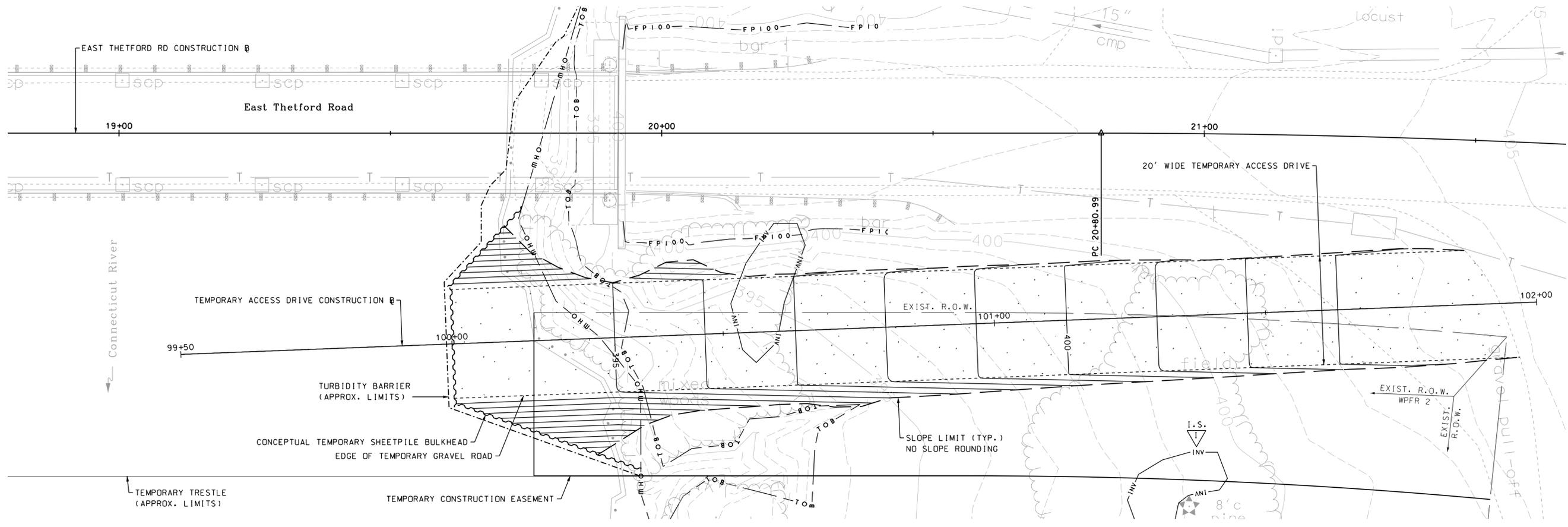


STA. 20+96.00
END CONSTRUCTION
 STA. 21+25.00
END APPROACH
MATCH EXISTING

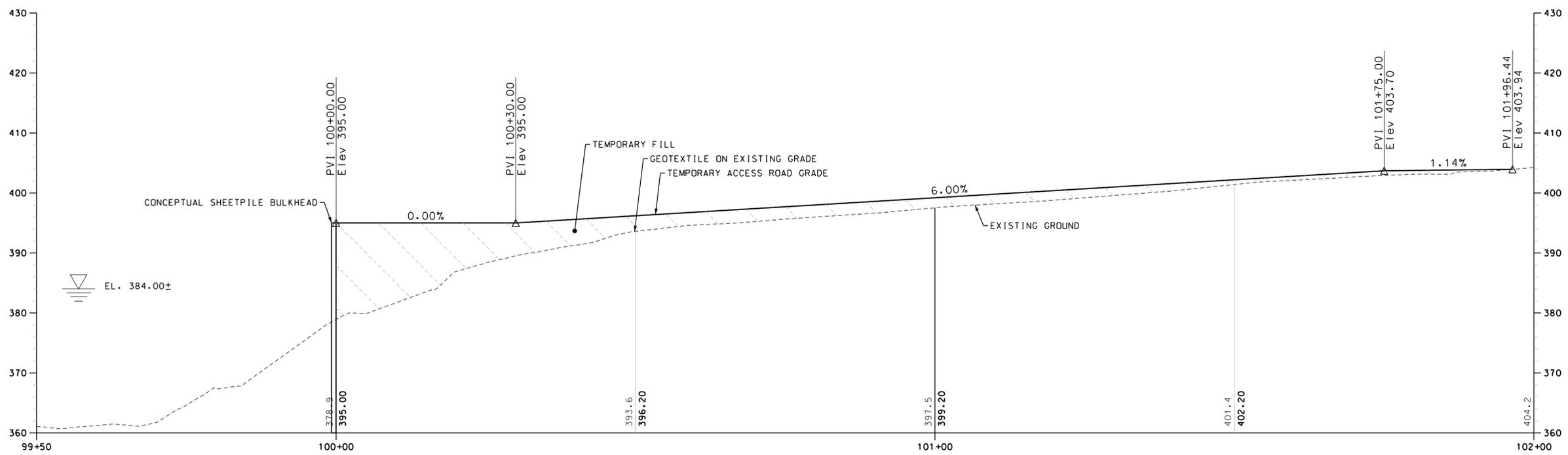


STATE OF NEW HAMPSHIRE LYME AND THETFORD			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
EROSION CONTROL PLAN (2 OF 2)			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14460EC02	14460	9	12

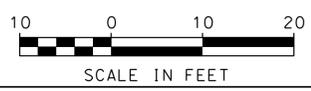
SDR PROCESSED	NHDDT	DATE	REVISIONS AFTER PROPOSAL
NEW DESIGN	TJC	DATE 06/21	STATION
SHEET CHECKED	DEM	DATE 06/21	NUMBER
AS BUILT DETAILS		DATE	DATE



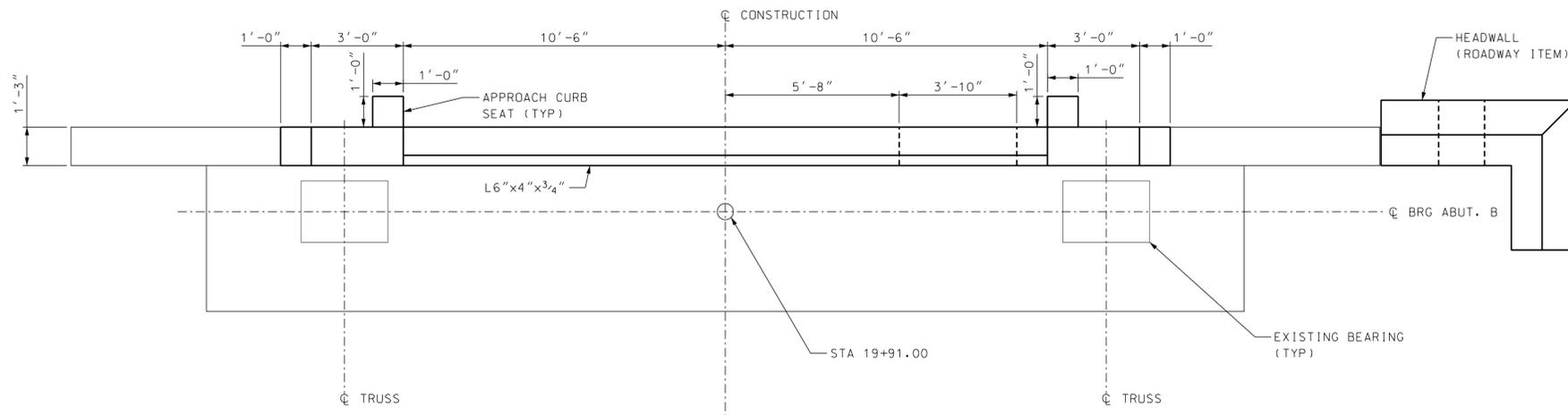
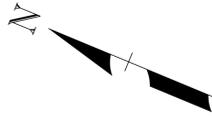
PLAN
SCALE: 1" = 10'



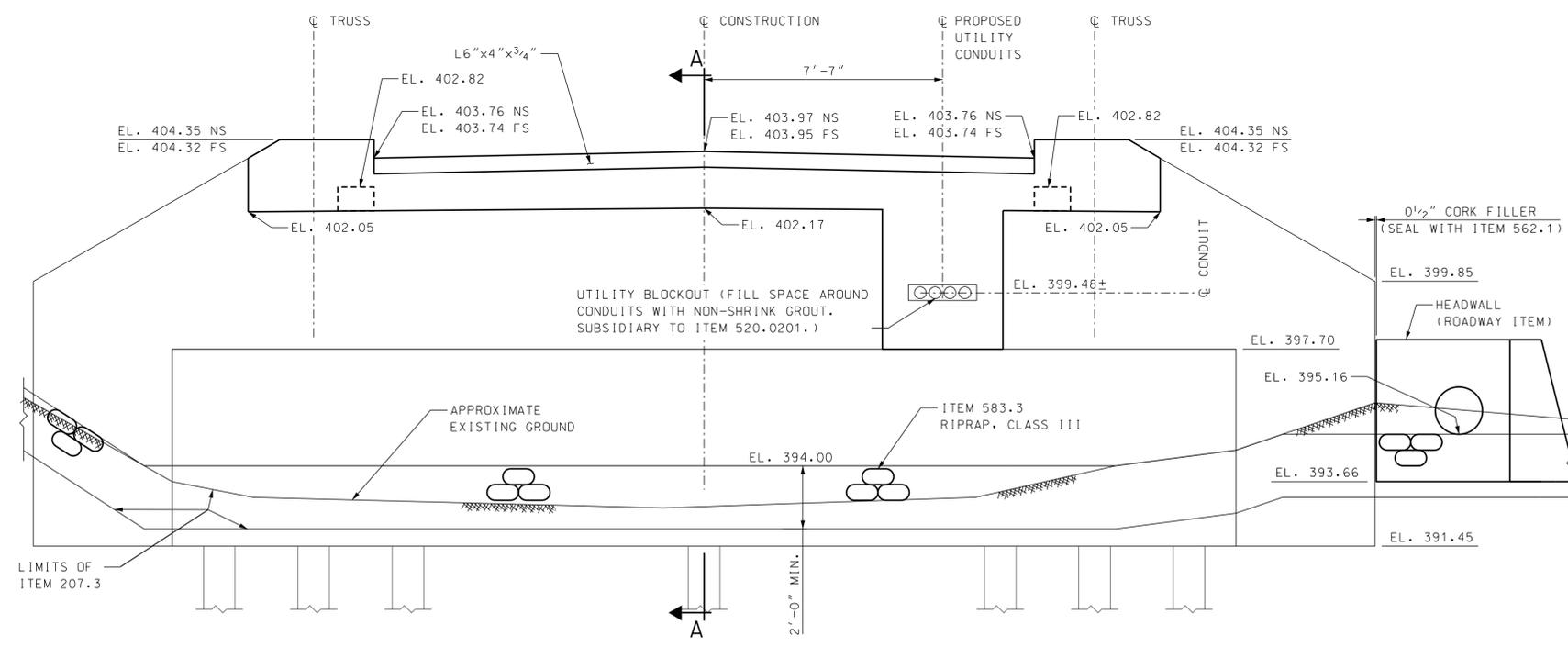
PROFILE
SCALE: 1" = 10'



STATE OF NEW HAMPSHIRE LYME AND THETFORD			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
TEMPORARY ACCESS DRIVE PLAN & PROFILE			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14460ACS	14460	10	12

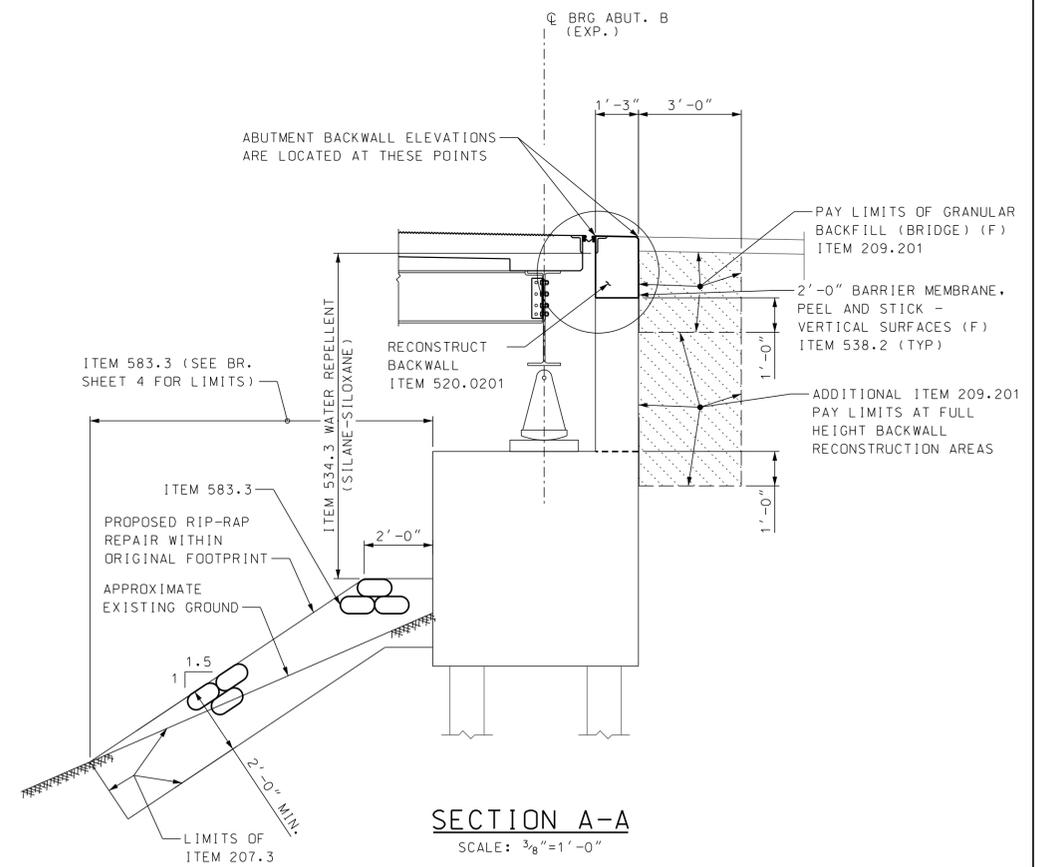


PLAN
SCALE: 3/8"=1'-0"



ELEVATION
SCALE: 3/8"=1'-0"

NOTE: ABUTMENT REPAIR AREAS NOT SHOWN. SEE BRIDGE SHEET 12.

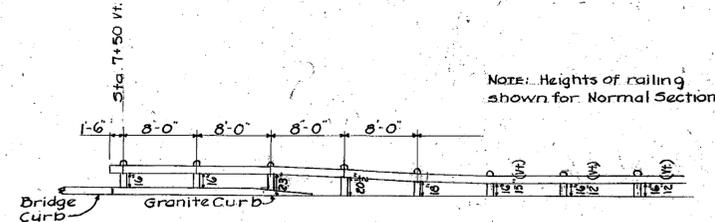


SECTION A-A
SCALE: 3/8"=1'-0"

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN									
TOWN	LYME AND THETFORD	BRIDGE NO.	053/112	STATE PROJECT	14460	BRIDGE SHEET			
LOCATION	VT ROUTE 113 & EAST THETFORD ROAD OVER THE CONNECTICUT RIVER					- OF -			
ABUTMENT B RECONSTRUCTION									
REVISIONS AFTER PROPOSAL		BY	DATE	CHECKED	DATE	BY	DATE	FILE NUMBER	
		DESIGNED	KLW	04/2021	CHECKED	DDT	04/2021	1-14-2-6	
		DRAWN	KLW	04/2021	CHECKED	LSF	04/2021		
		QUANTITIES	KLW	04/2021	CHECKED	JDG	04/2021		
		ISSUE DATE	FEDERAL PROJECT NO.			SHEET NO.		TOTAL SHEETS	
		REV. DATE	A000(394)			11		12	

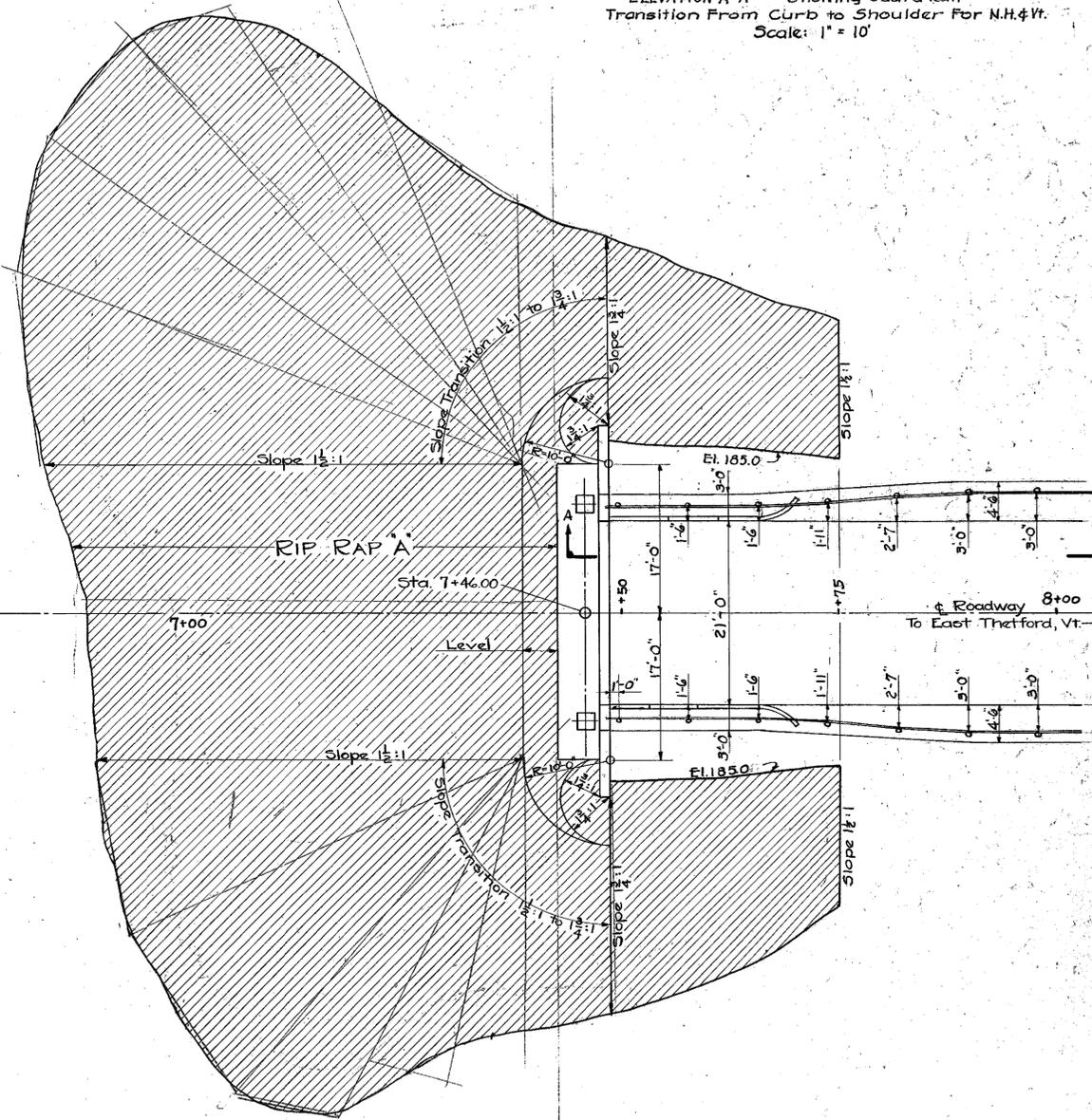
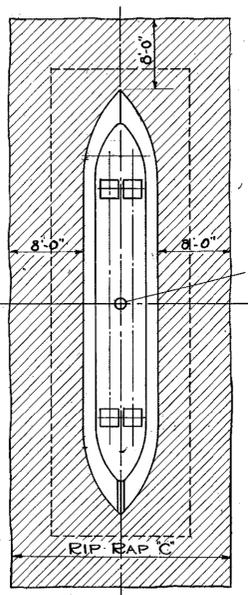
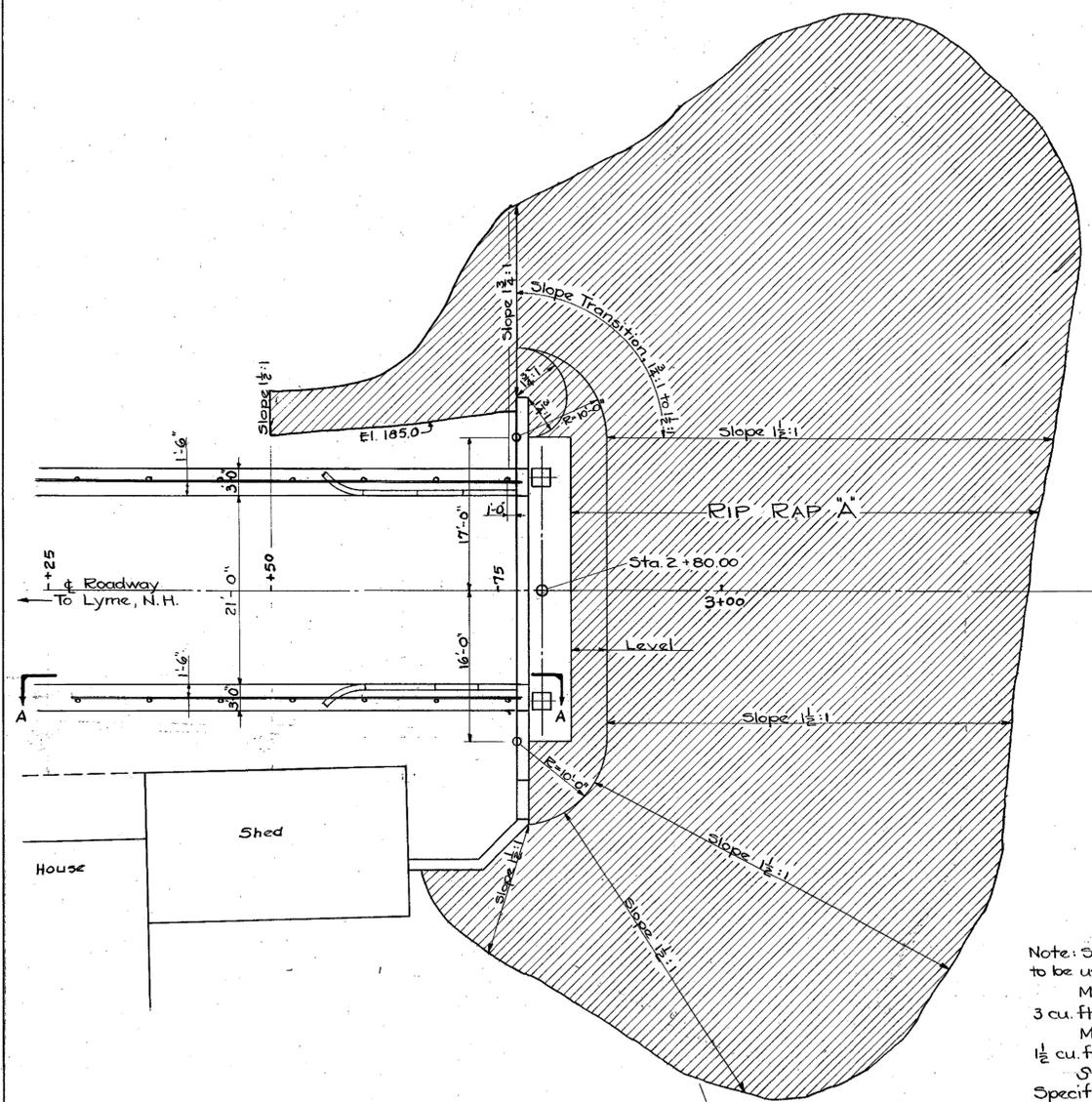


SUBDIRECTORY	DGN LOCATOR	SHEET SCALE
BRC	14460ABUT	AS NOTED

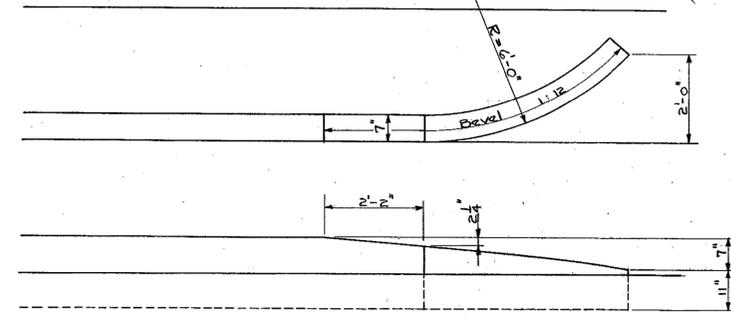


DETAIL OF RIP RAP "A" + "C"

Scale 1" = 10'-0"

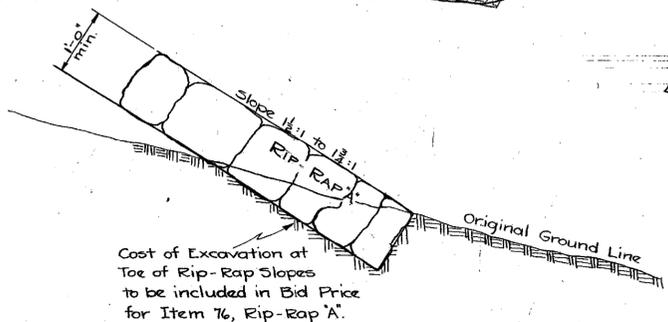


Note: Stone from existing Piers and Abutments to be used for Rip Rap "A" + "C".
 Min. Volume of stone for Rip Rap "A" shall be 3 cu. ft. except stone used to fill voids.
 Min. Volume of stone for Rip Rap "C" shall be 1/2 cu. ft. except stone used to fill voids.
 See Amendment to New Hampshire Standard Specifications, Section 517.
 All Stone used for Rip Rap shall have a Minimum Dimension of 9 inches.



DETAIL OF GRANITE CURB RETURN

Scale 1/2" = 1'-0"



DETAIL AT TOE OF RIP RAP SLOPE

This Sheet Revised January 8, 1937.
 Destroy all Previous Prints.

SHEET NO.	TOTAL SHEETS
12	12

STATE OF NEW HAMPSHIRE
 HIGHWAY DEPARTMENT
 TOWNS: LYME, N.H. - THETFORD, VT.
 PROJECT: W.P.R. 2 - W.P.A. 99016
 LOCATION: About 1.4 miles west of LYME, N.H.
 ROAD: LYME, N.H. to E. THETFORD, VT.
 STREAM: CONNECTICUT RIVER
 Designed by G.R.W. Date 10-30-36
 Drawn " " " 10-30-36
 Traced " " " 12-21-36
 Checked " " " 12-21-36
 Sheet 5 of 14 Sheets
 File No. 6-14-36